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A REVISION OF THE RHOPALOSOMATIDAE  
(HYMENOPTERA)

by  
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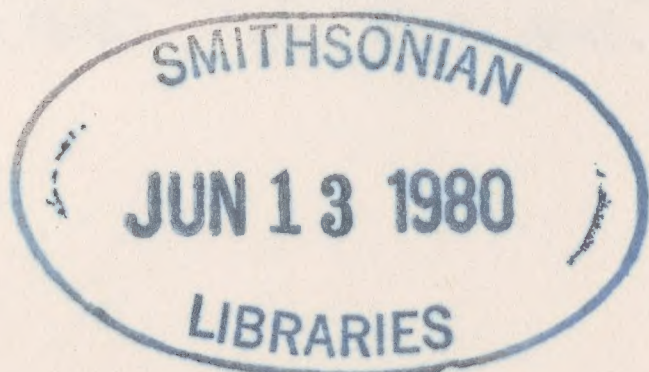
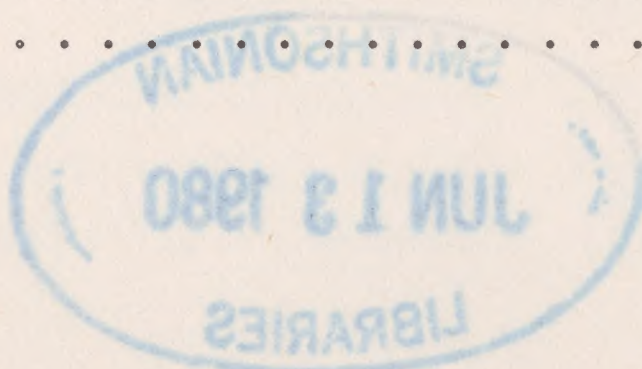




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The Rhopalosomatidae is a small family of wasps that are parasites of Gryllidae. Specimens have been scarce in collections because most species are nocturnal or crepuscular and are not collected on flowers as are most other wasps. When use of Malaise traps recently became popular these wasps turned up in the traps in some numbers. Now, there are enough specimens available for a substantial advance in the systematics of the family. Specimens of the flightless genus Olixon, however, are still in short supply.

Some characteristics of the Rhopalosomatidae, in addition to those common to other Aculeata, are as follows: Notaulus and prepectal carina absent. Mesopleurum without a median transverse groove. Mesosternum with a pair of plates on its hind edge that partially cover the bases of the middle coxae. Femora without bristles, the tibiae without bristles or with only small weak bristles. Female tarsi weakly to strongly widened, with dense suberect hairs beneath. Male tarsal claws with a tooth near apical point. Female tarsal claws simple or with a postmedian tooth, sometimes also with a subbasal low rounded tooth. Abdomen flexible between segments 1 and 2. Male clasper ending in a long upcurved spine. Female subgenital plate roundly folded on midline, triangular in side view, with short dense hairs. Female pygidium with a vertical bare area on each side of which the hairs are a little longer and sparser. Sting upcurved.

There is a wingless or brachypterous genus, Olixon, and three fully winged genera. In the winged genera the inner margin of the eye is notched, the flagellar segments (at least the basal segments) have a pair of conspicuous bristles at the apex of each, and the female tarsi are strongly expanded. In the flightless genus Olixon the eye margin is not notched, the bristles on the flagellum are small or absent, and the female tarsi are only weakly expanded.

There has been speculation about the systematic position of the Rhopalosomatidae. It is certain that the family belongs in the Aculeata, but I am not prepared to say to which other aculeate families it is most closely related. Ashmead in 1895 gave a summary of the opinions expressed up to that date (Proc. Ent. Soc. Washington 3: 303-309). The interested reader should refer to this publication. Brothers (1975. Univ. Kansas Sci. Bul. 50: 483-648) relates it to the Psammocharidae.

Some details are known about the biology of one species, the Nearctic Rhopalosoma nearcticum. It parasitizes crickets of the genera Hapithus and Orocharis. These crickets are frequently found with a blackish larva adhering to one side, above the base of a hind femur. If captured and confined, such a parasitized cricket will soon succumb and the full-grown larva will burrow into the soil, spin a cocoon, and hibernate until it is ready to emerge as an adult the next summer. Gurney (1953. Proc. U. S. Natl. Mus. 103: 19-34) gives



biological details about this species. One other species has been reared, the wingless Olixon australiae, as a parasite of a trigonidiine cricket. It is probable that the entire family has an essentially similar biology.

The family contains four genera: Olixon (wingless or brachypterous) with species in North America, South America, Africa, and Australia; Liosphex with one species ranging from Florida to Brazil and another species in Mindanao; Paniscomima with species in Africa, Madagascar, Sri Lanka, India, and Nepal; and Rhopalosoma with one species in eastern United States and sixteen species Neotropical.

Specimens used in this study were from the following collections. After the name of each collection is the name of the person who aided this work by sending the specimens on loan.

Cambridge (Museum of Comparative Zoology, Harvard University).

Prof. E. O. Wilson.

East Lansing (Department of Entomology, Michigan State University).

Prof. Roland Fischer.

Ithaca (Department of Entomology, Cornell University).

Dr. L. L. Pechuman.

La Plata (Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata). Prof. Luis De Santis.

London (British Museum (Natural History)). Mr. Michael Day.

Ottawa (Canadian National Collection). Dr. Lubomir Masner.

Paris (Muséum National d'Histoire Naturelle). Mlle. S. Kelner-Pillault.

Philadelphia (Academy of Natural Sciences of Philadelphia).

Dr. David C. Rentz.

Strasbourg (Musée Zoologique de l'Université et de la Ville).

Dr. F. Gouin.

Townes (Collection of Henry and Marjorie Townes).

Washington (National Museum of Natural History).

Dr. Arnold Menke.

All holotypes or lectotypes have been seen except for those of Arnold, Enderlein, and Berland. Paratypes of all of Berland's species have been studied. The Arnold and Enderlein species have been identified from their original descriptions, which in these cases seem to be adequate.

I wish to thank the curators who sent specimens on loan, and to thank several collectors who sent specimens for the Townes collection: Dr. and Mrs. Henry Howden, Dr. Sam Breeland, Dr. Lionel Stange, Mr. Luis Pena, and especially Col. Moacir Alvargena. My wife contributed supportive work during the study and in the years leading up to it.



## Key to the genera of Rhopalosomatidae

1. Eye margin not notched opposite antennal socket. Wings absent or shorter than thorax. First tergite 0.33 to 0.6 as long as wide. Male subgenital plate triangular, its apical 0.5± margined with short bristles. . . . . 1. Olixon (p. 3)
- Eye margin notched opposite antennal socket. Wings much longer than thorax. First tergite 1.3 to 6.8 as long as wide. Male subgenital plate triangular with apex narrowly truncate, the truncate portion margined with short bristles. . . . . 2
2. Occipital carina lacking. First tergite about 1.5 as long as wide. Anal lobe reaching 0.35 to 0.6 the distance to nervellus. . . . . 2. Liosphex (p. 10)
- Occipital carina present on upper 0.6 of head. First tergite 2.4 to 6.8 as long as wide. Anal lobe reaching 0.65 to 1.0 the distance to nervellus. . . . . 3
3. Postnervulus (= the oblique apical sections of discoideus) arched, the arching strongest at or below middle and flattened or indented at origin of subdiscoideus. Female tarsal claws without a tooth. Penis valve with its preapical process broadly triangular and overlapped at its apex by basal part of penis head. Ethiopian and Oriental species. . . . . 3. Paniscomima (p. 12)
- Postnervulus sinuate. Female tarsal claws with a strong tooth near middle, often also with a blunt tooth near base. Penis valve with its preapical process narrow to broad, distant from penis head. American species. . . . . 4. Rhopalosoma (p. 16)

1. Genus Olixon

Olixon Cameron, 1887. *Biologia Centrali-Americana*. Insecta. Hymenoptera. 1: 412.

Type: Olixon testaceum Cameron. Monobasic.

Harpagocryptus Perkins, 1908. *Proc. Hawaiian Ent. Soc.* 2: 34.

Type: Harpagocryptus australiae Perkins. Monobasic.

Algoa Brues, 1910. *Jour. New York Ent. Soc.* 18: 18. Name preoccupied by Gray, 1840 and by Castelnau, 1861. New synonym.

Type: (Algoa heterodoxa Brues) = dentatum Cameron. Monobasic.

Saphobethyllus Kieffer, 1911. *Ann. Soc. Sci. Bruxelles* (2) 35: 216.

Type: (Saphobethyllus pallidus Kieffer) = testaceum Cameron. Monobasic.

Algoella Kieffer, 1914. *Das Tierreich* 41: 473. New name for Algoa.

Nealgoa Brues, 1922. *Psyche* 29: 105.

Type: Nealgoa banksii Brues. Original designation.

Psyllosphex Arnold, 1935. *Ann. Transvaal Mus.* 15: 479.

Type: Psyllosphex saltator Arnold. Original designation.

Body length 2.9 to 7.0 mm. Wings vestigial or absent, not extending beyond apex of tergite 1. Thorax modified as in other apterous Hymenoptera. Eye elliptic, its inner margin not notched. Ocelli very small or lacking. Temple very weakly convex, long or moderately long, the head not or very little constricted to occipital carina, the occipital carina incomplete below.



Palpi of moderate length. Flagellum short to long, its basal segments sometimes with a short weak bristle at apex on upper side. Hind edge of mesosternum with a very large bilobed flange that is neither impressed nor separated by a groove. Propodeum with a large apicolateral tooth on each side. Front femur swollen, especially in female. Female tarsi weakly to moderately widened and flattened, with dense tenent hairs beneath, the fourth segment more or less bilobed. Male tarsal claws with a large preapical tooth; female tarsal claws stout and simple. First tergite 0.33 to 0.6 as long as wide, usually with a transverse carina near its basal 0.4. Male subgenital plate large, triangular, its apical  $0.5 \pm$  margined with small, short bristles.

Eight species are known, one in the United States, one in Central and South America, four in Africa, and two in Australia. The United States species (banksii) and one of those from Africa (saltator) are reported as running or jumping on sand. The United States species has been found active at night as well as by day. The Neotropic species has been taken in Malaise traps. The species australiae was reared from a trigonidiine cricket. There is circumstantial evidence that O. banksii parasitizes crickets of the genus Nemobius and that O. testaceum parasitizes crickets of the genus Cycloptilum. This is the extent of the available biological data.

#### Key to the species of Olixon

1. Cheek without a groove from the eye to the mandible. . . . . 2  
Cheek with a groove from the eye to the mandible. . . . . 4
2. First flagellar segment 1.8 as long as wide. Upper hind edge of eye separated from occipital carina by 1.1 the width of the scape. Eastern Australia. . . . . 1. flavibase, new species (p. 5)  
First flagellar segment 3.0 to 4.2 as long as wide. Upper hind edge of eye separated from occipital carina by 0.25 to 1.0 the width of the scape. . . . . 3
3. Body fuscous. Hind femur of female about 2.5 as long as high (male unknown). Ivory Coast. . . . . 2. majus, new species (p. 5)  
Body fulvous. Hind femur of female about 4.4 as long as high, of male about 5.5 as long as high. Eastern United States; also Mexico. . . . . 3. banksii Brues (p. 6)
4. Upper hind edge of eye separated from occipital carina by about 0.3 the width of the scape. Head and body mostly or entirely fulvous. Neotropic Region. . . . . 4. testaceum Cameron (p. 7)  
Upper hind edge of eye separated from occipital carina by about 1.1 to 2.6 the width of the scape. Head and body dark brown or blackish, or sometimes the thorax fulvoferruginous. . . . . 5
5. First tergite without a subbasal transverse carina. Propodeum without a transverse carina between its apicolateral teeth. Eastern Australia. . . . . 5. australiae Perkins (p. 7)  
First tergite with a subbasal transverse carina. Propodeum with a complete or incomplete transverse carina between its apicolateral teeth. . . . .



6. Front wing reaching to hind end of thorax. Hairs of head and abdomen very dense. First flagellar segment about 2.6 as long as wide. South Africa.  
6. saltator Arnold (p. 8)  
Front wing minute or absent, not longer than tegula. Hairs of head and abdomen moderately dense (but unusually sparse for the genus Olixon).  
First flagellar segment 1.4 to 2.2 as long as wide. . . . . 7
7. Thorax fulvoferruginous. Apex of scutellum a 90° rounded angle. Upper hind edge of eye separated from occipital carina by 1.5 the width of scape. Front wing present as a small vestige. Rhodesia.  
7. myrmosaeforme Arnold (p. 9)  
Thorax reddish brown to blackish. Apex of scutellum rounded or sub-truncate. Upper hind edge of eye separated from occipital carina by about 2.0 the width of the scape. Front wing absent. Southeast coast of South Africa. . . . . 8. dentatum Cameron (p. 9)

1. Olixon flavibase, new species

Male: Unknown.

Female type: Body 3.8 mm. long. Hind margin of eye separated from occipital carina by 1.3 the width of scape. Front ocellus lacking, the hind ocelli present as small vestiges. Vertex with fine, moderately dense hairs that arise from very small punctures. Cheek without a groove from eye to mandible. First segment of flagellum 1.6 as long as wide. Propodeum with a projecting flange on the median 0.4 of the distance between its apicolateral teeth, rounded on each side between this flange and the apicolateral teeth. Hind femur 4.4 as long as deep. Fourth tarsal segments short, with long apicolateral lobes, one lobe about 2.2 as long as the other. Front wing paddle shaped, reaching to end of first tergite. Hind wing obscured (or absent?). Premedian transverse carina of tergite 1 strong, evenly arched. Upper face of tergite 1 evenly convex.

Fuscous. Scape, pedicel, coxae, trochanters, base of hind femur, and tibial spurs stramineous or yellowish, the scape brownish medially and the coxae brownish basally.

Type: ♀, Cairns [Australia], Feb. 1902 (London).

2. Olixon majus, new species

Male: Unknown.

Female type: Length 7.7 mm. Eye separated from occipital carina by 0.25 the width of scape. Ocelli lacking. Vertex with fine, short, dense hairs that arise from dense, very small punctures. Cheek without a groove from eye to mandible. First flagellar segment 4.2 as long as wide. Propodeum between its apicolateral teeth with a transverse carina on only the median 0.3 of the distance and this median portion weak at center. Hind femur 2.5 as long as deep. Front wings paddle-shaped, reaching base of tergite 2. Hind wing a small, narrow vestige. Tergite 1 with a strong premedian transverse carina, behind the transverse carina weakly flattened medially and with a median longitudinal carina.

Fuscous. Mandible, antenna, and legs beyond trochanters brown. Palpi, coxae, and trochanters pale brown. Front wings weakly infusate.



Type: ♀, "Lampto" [biological station], Ivory Coast, Nov. 11, 1965, Y. Guillon (Paris).

### 3. Olixon banksii Brues

\*Nealgoa banksii Brues, 1922. Psyche 29: 106. ♀. Type: ♀, U. S. A.: Sea Cliff, Long Island, New York (Cambridge). Type studied in 1973.

Nealgoa banksii Reid, 1939. Proc. Roy. Ent. Soc. London 8: 101. des.

Olixon banksii Krombein, 1950. Jour. Elisha Mitchell Sci. Soc. 65: 264-265.

♂, N. C.: Kill Devil Hills. "running swiftly over sand barrens".

Olixon banksii Krombein, 1951. U. S. Dept. Agr. Agr. Monog. 2: 774. N. Y., D. C., N. C., Fla., Ohio, Minn., Kans.

Length 2.9 to 7.0 mm. Eye separated from occipital carina by about 0.3 to 1.0 the width of the scape. Vertex with fine, dense, short hairs that arise from small, closely spaced punctures. Ocelli very small, the median ocellus often lacking. Cheek without a groove from eye to mandible. First flagellar segment about 3.5 as long as wide. Carina between apicolateral teeth of propodeum present only on median 0.3 of the distance. Hind femur about 5.0 as long as high in male, about 4.4 as long as high in female. Female tarsi flattened beneath and widened, the fourth segment short and with apicolateral angles long, the angle on one side about 1.5 as long as on the other. Front wing paddle-shaped and reaching about to base of tergite 2, or sometimes present as a small narrow strap that is about as long as tegula. Hind wing a tiny linear vestige. Premedian transverse carina of tergite 1 strong, dipped and irregular at midline. Tergite 1 behind its transverse carina with a weak median longitudinal impression, often with a short median ridge in the impression which connects with the transverse carina.

Light fulvous. Flagellum brown apically. Front wing weakly infusate. Apical 0.4± of middle and hind femur often brownish. Subapical 0.4± of hind tibia often darkened in female. Subapical band on tergite 2 and apical tergites sometimes infusate, the band on tergite 2 narrowed medially and not reaching sides of the tergite.

Specimens: 16♂, 12♀ from the United States in Arkansas (Mississippi Co.); District of Columbia (Washington); Florida (Arcadia, Gainesville, Hillsboro Co., and Welaka); Georgia (Mosquito Creek and Spring Creek, both in Decatur Co.); Kansas (Pottawatomie Co. and 7 miles west of Lawrence); Louisiana (Chicot State Park in Evangeline Co.); Maryland (Plummers Is.); New York (Farmingdale); North Carolina (Kill Devil Hills); and Ohio (Sandusky). One additional specimen is from "Mexico".

Dates of collection are from May 26 to June 15 for males and from June 28 to Sept. 10 for females; also a female collected March 30 to Apr. 1 at Arcadia, Fla. One female is labeled as "collected on sand". Dr. P. A. Kownowski informs me (in litt.) that specimens collected by him in Decatur Co., Ga. were found while collecting at night (8:30-10:30 P.M.). They were running around swiftly in leaf litter. Krombein (1950) reported finding males "running swiftly over sand barrens". In the U. S. National Museum is a nymph of Nemobius sp. from Plummers Is., Md., that bears a small larval case of a rhopalosomatid. This case, because of its small size and the small size of its host, is presumed to be that of the present parasite.

This species occurs in the eastern United States in the Upper and Lower Austral Zones, and there is a record from "Mexico".



4. Olixon testaceum Cameron

\*Olixon testaceum Cameron, 1887. *Biologia Centrali-Americana. Insecta. Hymenoptera.* 1: 412. ♀. des., fig. Type: ♀, Panama: Bugaba (London). Type studied in 1974.

\*Saphobethyllus pallidus Kieffer, 1911. *Ann. Soc. Sci. Bruxelles* (2) 35: 216. ♂. Type: ♂, Mexico: Teapa in Tabasco (London). Type studied in 1974.

Saphobethyllus pallidus Kieffer, 1914. *Das Tierreich* 41: 288. ♂. des.

Olixon testaceum Turner & Waterston, 1917. *Ann. Mag. Nat. Hist.* (8) 20: 107. syn., des.

Olixon testaceum Reid, 1939. *Proc. Roy. Ent. Soc. London* 8: 95-97. ♂, ♀. des., fig.

Olixon pallidum Evans, 1964. *Bul. Mus. Comp. Zool.* 132: 16. syn.

Body 3.7 to 5.0 mm. long. Hind margin of eye separated from occipital carina by about 0.3 the width of the scape. Ocelli lacking. Vertex with fine dense hairs that arise from very dense small punctures. Cheek with a groove from eye to front condyle of mandible. First segment of flagellum about 4.0 as long as wide. Propodeum with a complete transverse carina between its teeth. Hind femur about 5.1 as long as deep. Fourth tarsal segment of female short, with long apicolateral lobes, one lobe about twice as long as the other. Front wing paddle-shaped, reaching to middle of first tergite. Hind wing a tiny linear vestige. Premedian transverse carina of tergite 1 strong, evenly arched. Upper face of tergite 1 evenly convex.

Pale fulvous, the mouth parts, coxae, and trochanters stramineous. First four incisures between flagellar segments and a line along the vertical groove in cheek infusate. Front wing faintly infusate. Second tergite with a pair of transverse subapical fuscous areas that make a medially interrupted subapical fuscous band. The type of pallidus, however, has the second tergite entirely pale fulvous.

Specimens: ♂, 2♀ (including the type of pallidus), Teapa, Tabasco, Mexico, March, H. H. Smith (London). ♂, Botanic Gardens, Georgetown, British Guiana, Jan. 13, 1926, L. D. Cleare, Jr. (London). ♀, Manaus, Amazonas, Brazil, Jan. 1972, F. M. Oliveira (Ottawa). 3♀, Reprêsa Rio Grande, Guanabara, Brazil, Dec. and Feb. 1966 and 1967, M. Alvarenga (Townes). ♀ (type of testaceum), Bugaba, Panama, Champion (London).

The four specimens from Brazil were apparently all collected in Malaise traps. In the U. S. National Museum is an adult male cricket from Honduras, determined as Cycloptilum trigonipalpus (probably by Caudell), which bears a small rhopalosomatid larva. Because of the small size of the cricket and its parasite, the larva is presumed to belong to the present species.

This species ranges from southern Mexico to southern Brazil.

5. Olixon australiae Perkins

\*Harpagocryptus australiae Perkins, 1908. *Proc. Hawaiian Ent. Soc.* 2: 34. ♀. des. Type: ♀, Australia: Queensland (London). "Larva forming a case on the side of abdomen of small crickets (Trigonidiidae)". Type studied in 1973.

Harpagocryptus australiae Kieffer, 1914. *Das Tierreich* 41: 289. translation of original des.



Harpagocryptus australiae Reid, 1939. Proc. Roy. Ent. Soc. London 8: 99-100.  
notes from original des.

Olixon australiae Perkins, 1976. Handbooks for the identification of British  
insects 6 (3a): 1. syn.

Male: Unknown.

Female: Length 3.4 mm. Eye separated from occipital carina by 1.5 the width of the scape (this figure estimated as the specimen at hand lacks antennae). Ocelli very small, the median ocellus vertical. Vertex weakly mat, with short, fine, rather dense hairs that arise from very fine punctures. Cheek with a groove from eye to front condyle of mandible. Antennae lacking in the specimen at hand, described originally by Perkins as being "much longer than head and thorax together, the scape is stout and about as long as the front funicle joint, which is decidedly shorter than the next, while those following are all subequally elongate, many times as long as thick". Pro-podeum rounded and not carinate between its apicolateral teeth. Hind femur 4.4 as long as deep. Tarsi moderately widened, flat beneath, their fourth segments of moderate length and with long apicolateral angles, one angle about 2.2 as long as the other. Front wing present as tiny narrow vestige that is not longer than tegula. Tergite 1 without a premedian transverse carina, evenly convex above.

Blackish brown. Clypeus, mouth parts, coxae, and trochanters light brown. Antennae lacking in specimen at hand. Legs beyond trochanters dark brown.

Specimen: Described from a female in London that lacks a locality label, determined by R. C. L. Perkins and believed to be the original type. The type was described as from Queensland, Australia, and as reared from a small trigonidiine cricket.

#### 6. Olixon saltator Arnold

\*Psyllosphex saltator Arnold, 1935. Ann. Transvaal Mus. 15: 480. ♀. des.,  
fig., biol. Type: ♀, South Africa: Beach Bush in Durban (Bulawayo).  
Identification from description.

Length: 4.6 to 6.2 mm. Eye separated from occipital carina by 1.15 to 1.3 the width of the scape. Ocelli very small. Vertex with slender rather dense hairs that arise from small dense punctures. Cheek with a groove from eye to front condyle of mandible. First flagellar segment about 2.6 as long as wide. Hind femur 4.8 as long as deep in male, 3.8 as long as deep in female. Female tarsi moderately widened, flattened beneath, the fourth segments with long apicolateral angles that are equal in length. Front wing paddle-shaped, reaching to base of tergite 1. Hind wing a small narrow vestige. Tergite 1 with a distinct premedian carina, behind the carina evenly convex.

Black. Mouth parts, antenna, front legs, and middle and hind legs beyond trochanters dark brown. Middle and hind coxae and trochanters pale brown. Front wing moderately infusate. Free margins of abdominal tergites and sternites brown.

Specimens: ♂, ♀, Burman Bush, Durban, South Africa, H. N. Empey, the ♂ dated Dec. 3, 1960 and ♀ dated March 18, 1963 (London). ♂, Durban, South Africa, Apr. 16, 1914, G. B. Cooper (London).



7. Olixon myrmosaeforme Arnold

\*Psyllosphex myrmosaeformis Arnold, 1935. Ann. Transvaal Mus. 15: 482.  
 ♀. des., fig. Type: ♀, Rhodesia: Bulawayo (Bulawayo). Identification from description.

Male: Unknown.

Female: Length 4.0 mm. Eye separated from occipital carina by 1.5 the width of scape. Ocelli very small. Vertex polished, with fine, moderately dense hairs that arise from very small punctures. Cheek with a groove from eye to front condyle of mandible. First flagellar segment 2.2 as long as wide. Apex of scutellum a rounded 90° angle. Propodeum with a strong transverse carina between its apicolateral teeth. Hind femur 4.0 as long as deep. Tarsi weakly widened and flattened below, the apicolateral angles of segments 4 moderately long, one angle about 1.2 as long as the other, the angles not tipped with bristles. Front wing a vestige that is a little longer than tegula. Hind wing absent. Tergite 1 with a premedian transverse carina, behind the carina faintly flattened on midline.

Head and abdomen blackish brown, the temple and lower 0.4± of the rest of head reddish brown. Mouth parts and segments 1-3 of antenna light brown, the rest of antenna dark brown. Thorax and legs fulvoferruginous, the femora tinged with brown toward apex.

Specimen: ♀, Rhodesia, Oct. 18, 1944, R. H. R. Stevenson (London).

8. Olixon dentatum Cameron

\*Apteropompilus dentatus Cameron, 1904. Ztschr. System. Hymen. Dipt. 4: 176. [♂]. Type: ♂, South Africa: Dunbrody in Cape Colony (London). Type studied in 1973.

Apteropompilus dentatus Cameron, 1905. Ztschr. System. Hymen. Dipt. 5: 136. ♂. des. South Africa: Dunbrody in Cape Colony.

\*Algoa heterodoxa Brues, 1910. Jour. New York Ent. Soc. 18: 18. ♀. des., fig. Lectotype: ♀, (labeled by Townes, 1973 and hereby designated), South Africa: Algoa Bay, Dec. 25, 1896, H. Brauns (Cambridge). Lectotype studied in 1973. New synonym.

Algoella heterodoxa Kieffer, 1914. Das Tierreich 41: 273. ♀. des., fig.

Algoa heterodoxa Brues, 1922. Psyche 29: 101, 108. ♂, ♀. des.

Psyllosphex dentatus Arnold, 1935. Ann. Transvaal Mus. 15: 482. ♂. des.

Psyllosphex dentatus Reid, 1939. Proc. Roy. Ent. Soc. London 8: 95-99. ♂, ♀. des., fig.

Algoa heterodoxa Reid, 1939. Proc. Roy. Ent. Soc. London 8: 97, 99-101. ♀. des., fig.

Algoella dentata Brues, 1943. Ann. Ent. Soc. America 36: 311. syn., des.

Algoella heterodoxa Brues, 1943. Ann. Ent. Soc. America 36: 311. syn., des.

Length 3.5 to 5.2 mm. Eye separated from occipital carina by about 2.0 the width of scape. Ocelli very small, the median ocellus absent or vestigial. Vertex polished, with numerous short hairs that are not dense, these arising from very small punctures. Cheek with a groove from eye to front condyle of mandible. First flagellar segment about 1.4 to 1.7 as long as wide. Apex of



scutellum rounded or subtruncate. Propodeum with a complete carina between its apicolateral teeth, or sometimes the carina interrupted sublaterally. Hind femur about 4.5 as long as deep in male, 3.5 to 4.2 as long as deep in female. Tarsi of female only a little widened, their fourth segments moderately long, with acute but not elongate apicolateral corners, the corners usually tipped with a long bristle. Wings absent, the tegula very small. First tergite with a premedian transverse carina, behind the carina without a median impression or irregularity.

Blackish brown, the antenna, mouth parts, and legs dark brown with the basal 2.5 or 3.0 segments of antenna fulvous. In a specimen from Durban, South Africa, the thorax, legs, and first tergite are brownish ferruginous rather than blackish.

Specimens: 4♀, Algoa Bay, South Africa, Oct. 11, 1896, Dec. 25, 1896, and undated, H. Brauns (3♀, including lectotype of heterodoxa in Cambridge; 1♀ in Washington). ♂ (type of dentatum), Dunbrody (near Grahamstown), South Africa, Sept. 20, 1900 (London). ♀, Durban, South Africa, Apr. 1914, G. B. Cooper (London).

This species occurs on the southeast coast of South Africa. It is variable in structure and color. Possibly it should be subdivided into several species.

## 2. Liosphex, new genus

Front wing 5.0 to 9.4 mm. long. Body moderately slender. Eye large, its inner margin with a large notch above antennal socket. Ocelli moderately small. Temple of moderate width, convex. Occipital carina absent. Palpi long. Flagellum of moderate length, its basal 7 or 8 segments with an apical pair of bristles on upper side or upper and inner sides, one of the pair usually longer than the other. Propodeum smoothly convex. Hind edge of mesosternum with a parallel pair of large triangular flanges that are separated from mesosternum by a groove but are in almost the same plane as the mesosternum. Front femur of female weakly to moderately swollen. Segments 2-5 of female tarsi wide, flat beneath, and with dense tenent hairs. Male tarsal claws with a pair of parallel points at apex and a large angulate lobe a little behind apex. Female tarsal claws stout, simple. First tergite about 1.5 as long as wide. Anal lobe reaching 0.35 to 0.6 the distance to nervellus.

Genotype: Liosphex varius, new species.

The generic name is from  $\lambda\epsilon\upsilon\sigma$  (smooth), plus  $\sigma\phi\eta\xi$  (wasp), referring to the smooth body contours and lack of sculpture.

Two species are known, one ranging from the Gulf shores of southern United States to southern Brazil and the other known from the Philippines.

### Key to the species of Liosphex

1. Nervulus distad of basal vein by about 0.5 its length. Angle between first recurrent vein and cubitus about  $50^{\circ}$ . Metapleurum with short fine hairs all over, the hairs a little sparser medially. Philippines.
  1. trichopleurum, new species (p. 11)
- Nervulus distad of basal vein by about 1.75 its length. Angle between first recurrent vein and cubitus about  $25^{\circ}$ . Metapleurum with short fine hairs on its anteroventral 0.2, the rest bare.
  - Southern United States to Brazil. . . . 2. varius, new species (p. 11)



1. Liosphex trichopleurum, new species

Male: Unknown.

Type female: Front wing 8.3 mm. long. Side of thorax (including side of pronotum and of propodeum) covered with short moderately dense hairs, their distribution even except for a slight thinning on collar of pronotum, near mesopleural fovea, and near center of metapleurum. Bristles on hind tibia of moderate length. Longest spur of hind tibia reaching a little past apex of hind basitarsus. Anal lobe reaching about 0.6 the distance to nervellus. Angle between first recurrent vein and cubitus about  $50^{\circ}$ . Nervulus distad of basal vein by about 0.5 its length.

Head stramineous, black on its hind side, vertex, and frons except laterally. Antenna blackish above, fulvous below. Mouth parts stramineous except that segments 2-5 of maxillary palpus are mostly fuscous. Thorax black, the tegula and upper half of pronotum stramineous. Front leg stramineous, its femur with a fuscous mark on base behind and tarsus dark brown above. Middle leg stramineous, the basal margin of coxa, basal 0.8 of trochanter, basal  $0.15\pm$  of femur, and the upper side of tarsus fuscous. Hind leg black, the apical 0.4 of coxa, apical 0.2 of trochanter, apical margin of femur, and under side of tarsus stramineous. Wings faintly brownish. Tergites 1, 4, 5, and 6 black with brownish apical and lateral stains. Tergites 2 and 3 stramineous, their bases fuscous.

Type: ♀, Kolambugan, Mindanao, Philippines, C. F. Baker (Washington).

2. Liosphex varius, new species

Front wing 5.0 to 9.4 mm. long. Sides of thorax (including side of pronotum and of propodeum) with short moderately dense hairs, the hairs lacking in the following areas: collar except its upper part, mesepisternum except for marginal areas, metapleurum except its anteroventral 0.2 and its upper front area, and central  $0.5\pm$  of lateral aspect of propodeum. Bristles on hind tibia rather long and conspicuous. Longest spur of hind tibia reaching 0.85 the length of hind basitarsus. Anal lobe reaching about 0.5 the distance to nervellus. Angle between first recurrent vein and cubitus about  $25^{\circ}$ . Nervulus distad of basal vein by about 1.75 its length.

Body and legs varying from mostly pale fulvous to almost entirely black, the wings tinged with brown. The lightest and darkest specimens of the series are colored as follows:

Lightest coloration: Pale fulvous. Head stramineous but vertex black between the eyes and frons. Face and clypeus pale yellow. Scape and pedicel each with a fuscous spot above. Median spot on front end and lateral  $0.25\pm$  of mesoscutum, spot at base of each wing, and sublateral stripe on propodeum fuscous. Median part of first tergite light brown. Wings yellowish brown.

Darkest coloration: Black. Area in eye notch, clypeus except for median apical area, basal 0.65 of mandible, apical part of palpi, hind corner and upper margin of pronotum, and tibial spurs whitish. Wings weakly infusate.

The upper margin of the pronotum and the space within the eye notch is always white, usually also the clypeus, cheek, and mouth parts. The antenna is usually fulvous below and fuscous above. The tibiae and tarsi are usually largely or entirely fulvous. Basal  $0.3\pm$  of tergites 1-3 and apical  $0.2\pm$  of tergite 1 usually fulvous, the abdomen often more extensively fulvous.







3. Nervulus distad of basal vein by about 0.6 its length, straight and strongly reclivous. Postnervulus flattened at origin of subdiscoideus. Africa.  
 3. erlangeriana Enderlein (p. 14)  
 Nervulus distad of basal vein by 0.8 to 2.0 its length, weakly or moderately reclivous. Postnervulus indented at origin of subdiscoideus.  
 Madagascan species. . . . . 4
4. Ocelli small, the lateral ocellus separated from eye by about 2.0 its long diameter. Wings tinged with yellow, the apex of front wing weakly infusate. Median vein fulvoferruginous. Madagascar.  
 4. seyrigi Berland (p. 14)
- Ocelli medium sized to large, the lateral ocellus separated from eye by less than 1.5 its diameter. Wings uniformly subhyaline. Median vein dark brown. . . . . 5
5. Flagellum fuscous. Nervulus distad of basal vein by about 1.6 its length. Madagascar. . . . . 5. bekilyi Berland (p. 15)  
 Flagellum brownish fulvous. Nervulus distad of basal vein by 1.0 to 1.45 its length. . . . . 6
6. Nervulus distad of basal vein by about 1.45 its length. First intercubitus about 0.7 as long as second section of cubitus. Tergites 4-6 fulvous. Madagascar. . . . . 6. rufantennata Berland (p. 15)  
 Nervulus distad of basal vein by about 1.0 its length. First intercubitus about 1.0 as long as second section of cubitus. Tergites 4-6 infusate. Madagascar. . . . . 7. curta, new species (p. 16)

1. Paniscomima abnormis Morley, new combination

\*Rhopalosoma abnorme Morley, 1910. Trans. Ent. Soc. London 1910: 386.  
 ♂, ♀. des., fig. Type: ♀, Sri Lanka: Mankulam (London). India: Calcutta. Type studied in 1974.

Hymenochimaera abnormis Brues, 1926. Psyche 33: 19. syn., des.

Male: Not available for study.

Female: Front wing 6.7 mm. long. Lateral ocellus separated from eye by 1.0 its long diameter. First intercubitus 1.2 as long as second section of cubitus. Nervulus basad of basal vein by 0.9 its length, vertical. Anal cell of front wing with a longitudinal spurious vein near its middle. Basal section of radiella moderately reclivous. First tergite 2.9 as long as wide.

Light fulvous. Interocellar area infusate. Flagellum reddish brown. Wings hyaline, their veins medium brown to dark brown.

Specimen: Redescribed from type, a female labeled Mankulam, N. P. [ Sri Lanka ], Nov. 1908, Wickwar (London). Morley had a second specimen, a male from Calcutta, India. This I have not seen. Dr. Karl Krombein informs me that he has recently collected a male and female in Sri Lanka. His specimens are in Washington.



2. Paniscomima opposita, new species

Male: Front wing 7.8 to 10.3 mm. long. Lateral ocellus separated from eye by about 0.2 of its long diameter. First intercubitus about 2.2 as long as second section of cubitus. Nervulus opposite basal vein or distad of it by less than 0.25 its length, weakly inclivous. Anal cell without a spurious vein. Basal section of radiella moderately inclivous. First tergite about 2.7 as long as wide.

Pale fulvous. Interocellar area, flagellum, tergite 7, and sternite 7 dark brown. Wings hyaline, the wing veins brown.

Female: Unknown.

Type: ♂, in Malaise trap, near Simra Adhabar, 600 ft., Nepal, Aug. 23 to 28, 1967, Canadian Nepal Expedition (Ottawa).

Paratypes: 4♂, same data as type (Ottawa).

3. Paniscomima erlangeriana Enderlein

\*Paniscomima Erlangeriana Enderlein, 1904. Zool. Anz. 27: 466. ♀. des., fig. Type: ♀, Somali: Umfudu (Berlin). Identification from description. Rhopalosoma erlangerianum Schulz, 1906. Spolia hymenopterologica, p. 223-225. key, syn., des.

Paniscomima erlangeriana Brues, 1926. Psyche 33: 18. des. South Africa: Windenham in Natal.

Rhopalosoma erlangerianum Krombein, 1951. U. S. Dept. Agr. Agr. Monogr. 2: 771. syn.

Front wing 7.3 to 12 mm. long. Lateral ocellus separated from eye by about 0.15 its long diameter in male, by about 0.18 its long diameter in female. First intercubitus about 1.0 as long as second section of cubitus. Nervulus distad of basal vein by about 0.6 its length, strongly reclivous. Anal cell without a spurious vein. Basal section of radiella vertical. First tergite about 2.3 as long as wide in male, about 3.7 as long as wide in female.

Pale fulvous. Interocellar area black. Flagellum ferruginous brown to dark brown. Wings subhyaline, the wing veins brown or dark brown.

Specimens: 21♀, Morogoro, 500 m., Tanzania, Jan. and Feb., 1962, Gerd Heinrich (Townes). 6♀, Uluguru, 700 to 1,800 m., Tanzania, Dec. 1961 and Jan. 1962, Gerd Heinrich (Townes). ♂, Mlanje, Malawi, Dec. 11, 1912, S. A. Neave (London). ♀, Otavifontein, Southwest Africa, Nov. 20, 1933, K. Jordan (London). 3♂, Tzaneen, South Africa, Jan. 11 and 18, 1971, H. and M. Townes (Townes). ♀, Tongaat, Natal, South Africa, 1909, H. C. Burnap (London).

This species is widely distributed in tropical Africa.

4. Paniscomima seyrigi Berland, new combination

\*Rogezia Seyrigi Berland, 1951. Mém. Inst. Sci. Madagascar (A) 15: 301. ♂, ♀. des., fig. Type: ♀, Madagascar: Ivondro (Paris). Paratype studied in 1974. The ♂ described by Berland is considered to be a separate species, treated below as P. curta.



Male: Unknown.

Female: Front wing 10.6 mm. long. Head more swollen than in other species of the genus. Lateral ocellus separated from eye by 2.0 its long diameter. First intercubitus 1.25 as long as second section of cubitus. Nervulus distad of basal vein by 1.5 its length, weakly inclivous. Anal cell without a spurious vein. Basal section of radiella strongly reclivous. First tergite 2.4 as long as wide.

Light fulvous. Interocellar area, tergites 3-6, and sternites 3-6 black. Flagellum fulvous. Wings tinged with fulvous, the apex of front wing weakly infusate. Wing veins fulvous.

Specimen: ♀ (paratype), eastern edge of forest, Rogez, Madagascar, 1935, A. Seyrig (Paris). Besides this paratype Berland had a ♀ from Ivondro, and another ♀ from south of the Bay of Antongil (both Madagascar).

##### 5. Paniscomima bekilyi Berland, new combination

\*Rhopalosoma bekilyi Berland, 1951. Mém. Inst. Sci. Madagascar (A) 5: 297.  
♂, ♀. des., fig. Type: ♀, Madagascar: Bekily (Paris). Paratypes studied in 1974.

Front wing 8.3 to 15 mm. long. Lateral ocellus separated from eye by about 0.12 its long diameter. First intercubitus about 1.25 as long as second section of cubitus. Nervulus distad of basal vein by about 1.6 its length, weakly inclivous. Anal cell without a spurious vein. Basal section of radiella weakly reclivous. First tergite about 2.9 as long as wide in male, about 3.8 as long as wide in female.

Fulvous. Ocellar area fuscous. Pedicel and flagellum dark brown. Wings subhyaline. Wing veins brown or dark brown.

Specimens: 3♂, 3♀ (all paratypes), Bekily, Madagascar, Oct., Nov., and Dec., 1936, A. Seyrig (Townes, Washington, and London). ♂, Isalo, 1,000 m., Madagascar, R. M. G. and P. D. (London). Berland reported specimens also from the localities Behara and Antanimora, both in Madagascar.

##### 6. Paniscomima rufoantennata Berland, new combination

\*Rhopalosoma bekilyi var. rufoantennata Berland, 1951. Mém. Inst. Sci. Madagascar (A) 15: 298. Types: Madagascar (Paris). One syntype studied in 1974.

Male: Unknown.

Female: Front wing 13 mm. long. Nervulus distad of basal vein by 1.45 its length. Pedicel and flagellum brownish fulvous. Otherwise similar to P. bekilyi.

Although Berland described this as a variety of bekilyi, the constant difference in the color of the antenna and the slight difference in the position of the nervulus indicate that more probably it is a distinct species.

Specimen: ♀ (syntype), Fort Dauphin, Madagascar, Dec. 1936, A. Seyrig (Townes). Berland reported 8 additional specimens, from the "same localities" as his P. bekilyi.



7. Paniscomima curta, new species

Rogezia Seyrigi Berland, 1951. Mém. Inst. Sci. Madagascar (A) 15: 301.  
♂ only.

Male: Front wing 6.9 to 9.0 mm. long. Lateral ocellus separated from eye by about 0.45 its long diameter. First intercubitus about 1.0 as long as second section of cubitus. Nervulus distad of basal vein by about 1.0 its length, weakly inclivous. Anal cell without a spurious vein. Basal section of radiella weakly reclivous. First tergite about 2.4 as long as wide.

Fulvous. Interocellar area blackish. Flagellum fulvous. Wings subhyaline, their veins dark brown. Tergites and sternites 4-7 infusate.

Female: Unknown.

Berland described this as the male of his P. seyrigi. Several conspicuous differences in structure and color, however, make it more likely that it is a separate species. The types designated below were originally paratypes of seyrigi. There were originally 27 male paratypes. I have not seen the rest of them.

Type: ♂, Ivondro, Madagascar, Dec. 1938, A. Seyrig (Paris).

Paratypes: 2♂, same data as type (Townes and Washington). ♂, Périnet, Madagascar, Feb. 1939, A. Seyrig (Townes).

4. Genus Rhopalosoma

Figures 1-44

Rhopalosoma Cresson, 1865. Proc. Ent. Soc. Philadelphia 4: 58.

Type: Rhopalosoma poeyi Cresson. Monobasic.

Sibyllina Westwood, 1868. Trans. Ent. Soc. London 1868: 329.

Type: (Sibyllina aenigmatica Westwood) = poeyi Cresson. Monobasic.

Front wing 4.8 to 17 mm. long. Body slender, coloration stramineous to ferruginous. Eye large, its inner margin with a sharp notch just above antennal socket. Ocelli moderately large to very large. Temple short, weakly convex. Occipital carina present on upper 0.6± of head, absent below. Palpi long. Flagellum long, its basal 5 to 8 segments with an apical pair of bristles on upper and inner sides. Propodeum smoothly convex. Hind edge of mesosternum with a parallel pair of triangular flanges that are separated from mesosternum by a groove and strongly impressed. Front femur of female not swollen. Female tarsi very wide, weakly concave beneath and with dense tenent hairs. Male tarsal claws with a pair of parallel points at apex and a large angulate lobe a little behind apex. Female tarsal claws long, with a median or subapical tooth and sometimes with an additional blunt tooth toward base. First tergite 4.0 to 6.8 as long as wide. Anal lobe reaching approximately 0.65 to 1.0 the distance to nervellus.

This is a moderate sized genus that is restricted to the Neotropic Region, except for one species in the southeastern United States. The species are active in late afternoon and at night. They are commonly collected in Malaise traps and at light. In flight they resemble ichneumonids of the genus Netelia or the subfamily Ophioninae and like these ichneumonids they rest in low dense vegetation during the day. The one species whose host is known (nearcticum) parasitizes crickets of the subfamily Eneopterinae. Its larva lives in a black



sac on the side of the cricket until it kills its host.

Key to the species of Rhopalosoma

1. Front spur of middle and hind tibiae with basal  $0.22 \pm$  forming a narrow basal neck, then suddenly enlarged to an elongate lanceolate distal portion. Head mostly black. Lanceolatum Group.  
  17. lanceolatum, new species (p. 27)
 Front spur of middle and hind tibiae without a narrow basal neck, the basal  $0.6 \pm$  parallel-sided and apical  $0.4 \pm$  gradually tapered. Head fulvous or ferruginous, the ocellar area fuscous. . . . . 2
2. Nervulus vertical, straight or weakly curved. Apical 0.65 of fifth segment of female tarsi parallel-sided. Isopus Group. . . . . 3  
 Nervulus reclivous, moderately to strongly curved. Apical 0.65 of fifth segment of female tarsi tapered, about 0.8 as wide at apex as at basal 0.35. Poeyi Group. . . . . 4
3. Basal section of radiella reclivous at about  $40^\circ$ . Front wing 6 to 8 mm. long. Body ochraceous. Northwestern Argentina.  
  1. minus, new species (p. 19)
 Basal section of radiella almost vertical. Front wing 11 to 14 mm. long. Body ferruginous. Brazil. . . . . 2. isopus, new species (p. 19)
4. Lateral ocellus separated from eye by 1.0 to 1.25 its long diameter. . . . . 5  
 Lateral ocellus separated from eye by 0.25 to 0.9 its long diameter. . . . . 6
5. Nervulus distad of basal vein by about 2.0 its length, about 2.0 as far from basal vein as from first recurrent vein.  
  3. missionicum Ogloblin (p. 20)
 Nervulus distad of basal vein by about 2.7 its length, about 3.1 as far from basal vein as from first recurrent vein.  
  4. impar, new species (p. 20)
6. Basal section of radiella with a bend of  $85^\circ$  to  $110^\circ$ . Cubitella meeting basal section of radiella at  $25^\circ$  to  $30^\circ$ . . . . . 7  
 Basal section of radiella with a curve rather than a bend, its two ends  $30^\circ$  to  $80^\circ$  from each other. Cubitella meeting basal section of radiella at  $35^\circ$  to  $70^\circ$ . . . . . 10
7. Notch in eye margin 0.8 as deep as width of median ocellus. Bend in basal section of radiella rather broad. Bolivia.  
  5. bolivianum Brues (p. 20)
 Notch in eye margin about 0.55 as deep as width of median ocellus. Bend in basal section of radiella sharper. . . . . 8
8. Flagellar segments 1-5 fuscous. Mexico to Panama.  
  6. simile Brues (p. 21)
 Flagellar segments 1-5 fulvous to brown. . . . . 9
9. Bend in basal section of radiella about  $90^\circ$ . Lateral ocellus separated from eye by about 0.75 its long diameter. Body ochraceous. Flagellum



- fulvous. Southeastern United States. . . . 7. nearcticum Brues (p. 21)  
 Bend in basal section of radiella about  $100^{\circ}$ . Lateral ocellus separated  
 from eye by about 0.55 its long diameter. Body ferruginous. Flagellum  
 dark fulvous to brown. Brazil. . . . 8. angulare, new species (p. 22)
10. Flagellar segments 1-5 fulvous to ferruginous. . . . . 11  
 Flagellar segments 1-5 brown to black. . . . . 13
11. Lateral ocellus separated from eye by 0.25 its long diameter. Haiti.  
 . . . . . 9. haitiense, new species (p. 23)  
 Lateral ocellus separated from eye by 0.3 to 0.6 its long diameter. . . . . 12
12. Second section of cubitus about 0.65 as long as third section. Basal sec-  
 tion of radiella strongly arched, its two ends divergent at about  $70^{\circ}$ .  
 Postnervulus moderately sinuate. Caribbean islands.  
 . . . . . 10. poeyi Cresson (p. 23)  
 Second section of cubitus about 0.5 as long as third section. Basal section  
 of radiella moderately arched, its two ends divergent at about  $45^{\circ}$ .  
 Postnervulus strongly sinuate. Brazil.  
 . . . . . 11. bahianum Schulz (p. 24)
13. Basal section of radiella inclivous at about  $18^{\circ}$ . Second cubital cell 2.1  
 as wide as high. Mexico. . . . . 12. obliquum, new species (p. 24)  
 Basal section of radiella approximately vertical. Second cubital cell 2.6  
 to 3.1 as wide as high. . . . . 14
14. Scape entirely fuscous. Nervulus weakly curved. Bolivia.  
 . . . . . 13. scaposum, new species (p. 25)  
 Scape fulvous or ferruginous, usually infusate apically. Nervulus weakly  
 to strongly curved. . . . . 15
15. Eye notch small, about 0.45 as deep as width of median ocellus. Panama  
 to Bolivia and Surinam. . . . . 14. guianense Schulz (p. 25)  
 Eye notch larger, about 0.8 as deep as width of median ocellus. . . . . 16
16. Nervulus distad of basal vein by about 1.55 its length, the front end of  
 nervulus a little closer to basal vein than to first recurrent vein.  
 Thorax ochraceous. Panama. . . . . 15. breelandi, new species (p. 26)  
 Nervulus distad of basal vein by about 2.1 its length, the front end of  
 nervulus a little farther from basal vein than from first recurrent vein,  
 or equidistant. Thorax fulvous to ferruginous. Brazil.  
 . . . . . 16. alvarengai, new species (p. 26)

#### Isopus Group

Front spur of middle and hind tibiae without a narrow basal neck, the basal  $0.6 \pm$  parallel-sided and apical  $0.4 \pm$  gradually tapered. Apical 0.65 of fifth segment of female tarsi parallel-sided. Nervulus vertical, straight or weakly curved.

The parallel-sided segment 5 of the female tarsi is a character shared with the Old World genus Paniscomima, which on other characters is definitely more primitive than Rhopalosoma. This is evidence that the Isopus Group



is the primitive species group of Rhopalosoma.

There are two species of this group, occurring in Brazil and Argentina.

1. Rhopalosoma minus, new species

Figures 1 (head); 17 (venation); and 32 ( $\sigma$  genitalia)

Front wing 5.6 to 8.7 mm. long. Notch in eye about 0.66 as deep as width of median ocellus. Lateral ocellus separated from eye by about 0.3 its long diameter. Female tarsal claws moderately long, with a postmedian acute tooth, the apical tooth stout. First intercubitus about 1.0 as long as second section of cubitus. Nervulus vertical, almost straight, distad of basal vein by about 2.0 its length. Basal section of radiella almost straight, reclivous at about  $40^\circ$  from the vertical. Male genitalia as in figure 32.

Ochraceous, including the flagellum. Ocellar area dark brown. Wings tinged with ochraceous, the veins light brown.

Type: ♀, 11 kilometers west of Las Cejas, Tucumán, Argentina, March 9 to 26, 1967, Lionel Stange (Townes).

Paratypes: 3 $\sigma$ , same locality and collector as type, dated Jan. 15 to Feb. 14, 1967, March 9 to Apr. 11, 1968, and April 26 to 29, 1967 (Townes). ♀, Las Cejas, Tucumán, Argentina, Jan. 21 to Feb. 21, 1968, C. C. Porter (Cambridge).  $\sigma$ , San Pedro Colalao, Tucumán, Argentina, Feb. 1966, Lionel Stange (Townes).

This species occurs in northwestern Argentina.

2. Rhopalosoma isopus, new species

Figures 2 (head); 18 (venation); and 33 ( $\sigma$  genitalia)

Front wing 11 to 13 mm. long. Notch in eye about 0.75 as deep as width of median ocellus. Lateral ocellus separated from eye by about 0.45 its long diameter. Female tarsal claws short, with a large postmedian tooth and with a very stout, short, strongly curved apical point. First intercubitus about 0.82 as long as second section of cubitus. Nervulus vertical, weakly curved, distad of basal vein by about 1.7 its length. Basal section of radiella weakly curved, subvertical or slanted about  $10^\circ$  from the vertical. Male genitalia as in figure 33.

Ferruginous, including the flagellum. Ocellar area blackish. Wings tinged with brown, their veins medium brown.

Type: ♀, Jatai, Goiás, Brazil, Nov. 1972, F. M. Oliveira (Townes).

Paratypes: 2 $\sigma$ , 7♀, same data as type (Townes). 4♀, Sinop,  $12^\circ 31' S$   $55^\circ 37' W$ , Brazil, Oct. 1975, M. Alvarenga (Townes).

Poeyi Group

Front spur of middle and hind tibiae without a narrow basal neck, the basal  $0.6 \pm$  parallel-sided and apical  $0.4 \pm$  gradually tapered. Apical 0.65 of fifth segment of female tarsi tapered, about 0.8 as wide at apex as at basal 0.35. Nervulus reclivous, strongly curved.

This group contains the majority of the genus.



3. Rhopalosoma missionicum Ogloblin

\*Rhopalosoma missionicum Ogloblin, 1951. Rev. Soc. Ent. Argentina 15: 11.  
 ♂. des., fig. Type: ♂, Argentina: Loreto in Misiones (La Plata).  
 Type studied in 1976.

Male type: Front wing 6.9 mm. long. Lateral ocellus separated from eye by 1.0 its long diameter. First intercubitus 1.0 as long as second section of cubitus. Nervulus distad of basal vein by 2.0 its length, 2.0 as far from basal vein as from first recurrent vein. Otherwise similar to R. impar. The male genitalia of this species have not been examined.

Specimen: ♂ (type), Loreto, Misiones, Argentina, Feb. 15, 1934 (La Plata).

4. Rhopalosoma impar, new species

Figures 3 (head); 19 (venation); and 34 (♂ genitalia)

Front wing 6 to 11 mm. long. Eye notch about 0.65 as deep as width of median ocellus. Lateral ocellus separated from eye by about 1.25 its long diameter. Female tarsal claws long, with a postmedian tooth, the apical tooth of moderate length, rather weakly curved. First intercubitus about 1.25 as long as second section of cubitus. Nervulus sinuate, strongly reclivous, separated from basal vein by about 2.7 its length, relatively close to first recurrent vein, about 3.1 as far from basal vein as from first recurrent vein. Basal section of radiella bowed, subvertical or weakly inclivous, joining cubitella at an angle of about 40°, its two ends divergent at about 70°. Male genitalia as in figure 34.

Fulvoferruginous, the flagellum brownish ferruginous and interocellar area blackish. Wings tinged with brown, their veins brown.

Type: ♀, Pedra Azul, 800 m., Minas Gerais, Brazil, Nov. 1972, Alvarenga and Seabra (Townes).

Paratypes: 2♀, same data as type (Townes). ♂, 2♀, Piracicaba, São Paulo, Brazil, Jan. 12, 20, and 22, 1965, C. A. and W. E. Triplehorn (Ithaca and Townes). ♂, Nanawa, Chaco, Paraguay, Oct. to Nov. 1926, A. Pride (London).

This species occurs in Paraguay and southern Brazil.

5. Rhopalosoma bolivianum Brues

Figures 4 (head) and 20 (venation)

\*Rhopalosoma bolivianum (as boliviense in Fig. 3) Brues, 1943. Ann. Ent. Soc. America 36: 316. ♀. key, des., fig. Type: ♀, Bolivia: Buena Vista near Santa Cruz (Ithaca). Type studied in 1974.

Male: Unknown.

Female: Front wing 12 mm. long. Eye notch 0.8 as deep as width of median ocellus. Lateral ocellus separated from eye by 0.67 its long diameter. Tarsal claws moderately long, with a postmedian tooth, the apical tooth of moderate length and moderately curved. First intercubitus 0.78 as long as second section of cubitus. Nervulus sinuate, reclivous, distad of basal vein



by 1.6 its length. Basal section of radiella weakly inclivous, with a median 90° bend, joining cubitella at an angle of 30°.

Fulvous, the flagellum medium brown. Interocellar area brown. Wings tinged with fulvous brown, the veins brown.

Specimen: ♀ (type), Buena Vista, near Santa Cruz, Bolivia, 1928, J. Steinbach (Ithaca).

#### 6. Rhopalosoma simile Brues

Figures 5 (head) and 35 (♂ genitalia)

\*Rhopalosoma simile Brues, 1943. Ann. Ent. Soc. America 36: 317. ♂, ♀. key, des., fig. Type: ♀, Barro Colorado Island, Panama (Washington). Type studied in 1974.

Front wing 8.2 to 16.5 mm. long. Scape dark brown. In all other respects similar to R. nearcticum. Male genitalia as in figure 35.

This will probably prove to be only subspecifically distinct from R. nearcticum.

Specimens: 15♂, 53♀ from Mexico (Atoyak in Vera Cruz, Catemaco at 1,100 ft. in Vera Cruz, 20 miles north of Huixtla in Chiapas, Mazatlán in Sinaloa, Minatitlán in Vera Cruz, and Mérida in Yucatán); Guatemala (Cayuga and Quirigua); British Honduras (Camp Sibim in Coyo District and Middlesex at 125 m.); El Salvador (Lake Ilopango near Apulo and Alta Marina at 2,500 ft. in San Salvador); Costa Rica (Turrialba at 600 m.); and Panama (Barro Colorado Island and Trinidad River). Collection dates are distributed from March 25 to October 6. Two of the specimens were collected at lights, others in Malaise traps. Specimens are in the collections of East Lansing, London, Ottawa, Townes, and Washington.

This species ranges from Mexico to Panama.

#### 7. Rhopalosoma nearcticum Brues

Figures 6 (head) and 21 (venation)

Rhopalosoma poeyi Ashmead, 1896. Proc. Ent. Soc. Washington 3: 304.

Mo.: St. Louis. N. C. Fla.: St. Augustine. Ky.: Louisville. Misdetermination.

Rhopalosoma poeyi Hood, 1913. Proc. Ent. Soc. Washington 15: 145-147. fig.,

biol. Md.: Plummers Island. Host: Orocharis saltator. Misdetermination.

Rhopalosoma poeyi Rohwer, 1913. Proc. Ent. Soc. Washington 15: 147-148.

discussion, distribution. Misdetermination.

Rhopalosoma poeyi Cresson, 1916. Mem. Amer. Ent. Soc. 1: 71. N.C.

Misdetermination.

Rhopalosoma poeyi Brimley, 1938. The insects of North Carolina . . . ,

p. 436. N. C.: Raleigh. Misdetermination.

\*Rhopalosoma nearcticum Brues, 1943. Ann. Ent. Soc. America 36: 316.

♂, ♀. key, des., fig. Type: ♀, Florida: Kissimmee (Cambridge).

Fla.: Seminole Co., Hillsboro Co., Ft. Meade, Gulfport, St. Augustine.

Md.: Plummers Island. Type studied in 1973.

Rhopalosoma nearcticum Gurney, 1953. Proc. U. S. Natl. Mus. 103: 19-34.

biol., figs. Ga., Fla., Ind., Md., Miss., Mo., N. C., S. C., Va.

Hosts: Hapithus agitator, H. brevipennis.



Front wing 7.0 to 13.2 mm. long. Eye notch about 0.44 as deep as width of median ocellus. Lateral ocellus separated from eye by about 0.75 its long diameter. Female tarsal claws long, with a postmedian pointed tooth and sub-basally a smaller rounded tooth, its apical tooth short, stout, and with a moderately strong curvature. First cubital vein about 0.90 as long as second section of cubitus. Nervulus sinuate, strongly reclivous, distad of basal vein by about 1.9 its length. Basal section of radiella strongly inclivous, with a bend of about 90° that is centered above the middle, the radiella meeting cubitella at an angle of about 25°. Male genitalia similar to those of R. simile (figure 35).

Ochraceous. Ocellar area black. Flagellum fulvous. Wings tinged with ochraceous, the veins light brown.

Specimens: 46♂, 66♀ from Florida (Fort Myers, Gulfport, Homestead, Jacksonville, Kissimmee, Lake Placid, Martin Co., Orange Co., Palm Beach Co., St. Augustine, Seminole Co., and Tall Timbers near Tallahassee); Georgia (Atlanta and Stone Mt.); Kentucky (Golden Pond); Louisiana (Bayou Chicot in Evangeline Co.); Maryland (Berlin, Mayo, and Plummers Island); Missouri (Columbia and Williamsville); North Carolina (Long Beach and Oxford); South Carolina (Greenville); Tennessee (Knoxville?); and Texas (Sinton). Collection dates in Florida range from April 23 to August 28, with a peak of collections in May and June. Farther north, the collection dates are from July 9 to October 29, and from San Patricio Co., Texas, there is a specimen dated June 17. About half of the total number of specimens were collected in Malaise traps. Two of the specimens are labeled as having been collected at lights.

In my own experience this species is locally common in the south Atlantic states, in dense shrubby vegetation where the humidity is high. Adults fly shortly before sunset and at least until dark, just above the bushes. In flight they resemble Ophion and Netelia except for their somewhat stouter appearance. Crickets of the genera Hapithus and Orocharis are often found with a bulging blackish larva of this parasite stuck on one side near the base of a hind leg, forcing the leg outward in an unnatural position. From such parasitized crickets there have been rearings by Hood (from Orocharis saltator) and by Gurney (from Hapithus agitator). Both of these workers published their observations (see synonymy above) and Gurney gave a detailed account of the biology with figures of the larva.

This species occurs in the Upper and Lower Austral zones of the eastern United States. It parasitizes crickets of the genera Orocharis and Hapithus.

#### 8. Rhopalosoma angulare, new species

Figures 7 (head); 22 (venation); and 36 (♂ genitalia)

Front wing 11 to 17 mm. long. Eye notch about 0.63 as deep as width of median ocellus. Lateral ocellus separated from eye by about 0.55 its long diameter. Female tarsal claws long, with a postmedian pointed tooth and sub-basally a smaller rounded tooth, its apical tooth stout, weakly curved. First intercubitus about 1.15 as long as second section of cubitus. Nervulus sinuate, reclivous, separated from basal vein by about 2.2 its length. Basal section of radiella inclivous, with a sharp bend of about 100° that is centered just above the middle, the radiella meeting cubitella at an angle of about 25°. Male genitalia as in figure 36.

Fulvoferruginous. Ocellar area blackish, the blackish mark extending a



little beyond the ocellar interspace. Flagellum dark fulvous to brown. Wings with a fulvoferruginous tinge, the veins ferruginous brown. Abdomen often somewhat infusate beyond segment 3.

Type: ♀, Encruzilhada, 960 m., Bahia, Brazil, Nov. 1972, M. Alvarenga (Townes).

Paratypes: 5♂, 22♀, same data as type (Townes). ♂, 8♀, Encruzilhada, 980 m., Bahia, Brazil, Nov. 1974, M. Alvarenga (Townes). ♀, Caruaru, 900 m., Pernambuco, Brazil, Apr. 1972, M. Alvarenga (Townes). 5♀, Linhares, Espirito Santo, Brazil, Nov. 1972, M. Alvarenga (Townes). ♀, Pedra Azul, Minas Gerais, Brazil, Nov. 1972, Alvarenga and Seabra (Townes).

This species occurs in eastern and southeastern Brazil.

#### 9. Rhopalosoma haitiense, new species

Figures 8 (head) and 23 (venation)

\*Rhopalosoma aenigmaticum Brues, 1943. Ann. Ent. Soc. America 36: 315.

♀. key, des., fig. Haiti. Misdetermination of aenigmaticum Westwood.

Male: Unknown.

Female type: Front wing 10.2 mm. long. Eye notch 0.75 as deep as width of median ocellus. Lateral ocellus separated from eye by 0.25 its long diameter. Tarsal claws moderately long with a postmedian tooth and near the base with a very low rounded tooth, its apical tooth of moderate stoutness and curvature. First intercubitus 0.88 as long as second section of cubitus. Nervulus sinuate, reclivous, distad of basal vein by 1.7 its length. Basal section of radiella inclivous, with a strong even curvature, its two ends divergent at 75°, the radiella meeting cubitella at 30°.

Ochraceous, the flagellum fulvous. Interocellar area dark brown. Wings subhyaline, the veins light brown.

Type: ♀, Manneville, Haiti (Cambridge). This specimen is one of those reported by Brues in 1943 incorrectly as R. aenigmaticum. Brues had an additional 2♂, 1♀ from the same locality. These I have not seen.

#### 10. Rhopalosoma poeyi Cresson

Figures 9 (head); 24 (venation); and 37 (♂ genitalia)

\*Rhopalosoma Poeyi Cresson, 1865. Proc. Ent. Soc. Philadelphia 4: 58.

♂, ♀. des., fig. Lectotype: ♀ (designated by Cresson, 1916), Cuba (Philadelphia). Lectotype studied in 1974.

\*Sibyllina aenigmatica Westwood, 1868. Trans. Ent. Soc. London 1868: 329.

♀. des. Lectotype: ♀ (labeled by Townes, 1973, hereby designated), Haiti (London). Lectotype studied in 1973. New synonym.

Sibyllina aenigmatica Smith, 1869. Trans. Ent. Soc. London 68 (proc.): LI. des.

Rhopalosoma aenigmatica Westwood, 1874. Thesaurus entomologicus oxoniensis p. 130-132. des., fig. Cuba. Haiti.

Rhopalosoma poeyi Schulz, 1906. Spolia hymenopterologica, p. 226. key.

Rhopalosoma poeyi Cresson, 1916. Mem. American Ent. Soc. 1: 71. Lectotype designation.

Rhopalosoma poeyi Brues, 1943. Ann. Ent. Soc. America 36: 315. ♀. key, des. Cuba.



Rhopalosoma poeyi Krombein, 1953. Amer. Mus. Novitates 1633: 7. des.  
Bahamas: South Bimini.

Front wing 4.8 to 8.2 mm. long. Notch in eye about 0.70 as deep as width of median ocellus. Lateral ocellus separated from eye by about 0.5 its long diameter in male, by about 0.4 its long diameter in female. Female tarsal claws long, with a postmedian tooth, the apical tooth strongly curved and rather short. First intercubitus about 0.83 as long as second section of cubitus. Nervulus moderately sinuate or curved, weakly reclivous, distad of basal vein by about 2.0 its length. Basal section of radiella strongly curved, meeting cubitella at an angle of about  $30^{\circ}$ , its two ends divergent at about  $70^{\circ}$ . Male genitalia as in figure 37.

Fulvoferruginous, including the flagellum. Interocellar area partly or entirely dark brown. Wings tinged with fulvous brown, their veins brown.

Specimens: 3♂, Man-o-War Cay, Bahamas, Aug. 23 and 30, 1971, H. and A. Howden (Townes). ♂, South Bimini Island, Bahamas, June 8, 1950, Cazier and Rindge (Washington). 2♂, 6♀, in light trap, interior of Cayman Island, behind Stakes Bay, Apr. 17 to Aug. 26, 1938, C. B. Lewis and C. H. Thompson (London and Townes). ♀ (type of poeyi), Cuba (Philadelphia). ♀, Jamaica (London). 2♀ (lectotype and paratype of aenigmatica), Santo Domingo, [Haiti] (London).

This species occurs in the Caribbean Islands, from the Bahamas to Hispaniola.

#### 11. Rhopalosoma bahianum Schulz

Figures 10 (head); 25 (venation); and 38 (♂ genitalia)

\*Rhopalosoma bahianum Schulz, 1906. Spolia hymenopterologica, p. 222, 226.  
♀. key, des. Type: ♀, Brazil: Orobó in Bahia (Strasbourg). Type studied in 1974.

Front wing 8.8 to 11.3 mm. long. Eye notch about 0.67 as deep as width of median ocellus. Lateral ocellus separated from eye by about 0.36 its long diameter. Female tarsal claws of moderate length, with a postmedian tooth but no subbasal tooth, the apical tooth moderately stout and weakly curved. First intercubital vein about 1.1 as long as second section of cubitus. Nervulus strongly curved and strongly reclivous, distad of basal vein by about 1.8 its length. Basal section of radiella long, weakly inclivous, evenly curved, its two ends divergent at about  $45^{\circ}$ , the radiella meeting cubitella at about  $60^{\circ}$ . Male genitalia as in figure 38.

Fulvous, the flagellum fulvous brown. Interocellar area black. Wings with a weak fulvous brown tinge, the veins brown.

Specimens: 2♂, 4♀, Encruzilhada, 960 m., Bahia, Brazil, Nov. 1972, M. Alvarenga (Townes). ♀, Barialba, 400 m., Ceará, Brazil, May 1969, M. Alvarenga (Townes).

#### 12. Rhopalosoma obliquum, new species

Figures 11 (head); 26 (venation); and 39 (♂ genitalia)

Male type: Front wing 10.2 mm. long. Eye notch 0.70 as deep as width



of median ocellus. Lateral ocellus separated from eye by 0.47 its long diameter. First intercubitus 1.25 as long as second section of cubitus. Nervulus sinuate, reclivous, distad of basal vein by 1.44 its length. Basal section of radiella inclivous at  $35^{\circ}$  from the vertical, moderately curved, meeting cubitella at  $70^{\circ}$ . Genitalia as in figure 39.

Pale fulvous. Flagellum black. Pedicel fuscous. Scape stramineous, infusate above. Ocellar area fuscous and the fuscous area reaching laterad to eye. Wings with a fulvous tinge, the veins light brown. Abdomen infusate beyond segment 3.

Female: Unknown.

Type: ♂, 12 miles south of Valle Nacional, 3,000 ft., Mexico, May 17, 1971, Henry Howden (Townes).

### 13. Rhopalosoma scaposum, new species

Figures 12 (head); 27 (venation); and 40 (♂ genitalia)

Male type: Front wing 8.7 mm. long. Eye notch 0.56 as deep as width of median ocellus. Lateral ocellus separated from eye by 0.80 its long diameter. First intercubitus 0.85 as long as second section of cubitus. Nervulus weakly curved, strongly oblique, basad of basal vein by 1.12 its length. Basal section of radiella almost vertical, strongly bowed at middle with the two ends divergent at  $75^{\circ}$ , radiella meeting cubitella at  $45^{\circ}$ . Genitalia as in figure 40.

Pale fulvous. Ocellar area and frons fuscous, the frons fulvous along its lateral and lower edges. Antenna entirely black. Wings tinged with pale fulvous, the veins light brown.

Female: Unknown.

Type: ♂, Crystal Mayu, 300 m., Cochabamba, Bolivia, Dec. 5, 1949, L. Peña (Townes).

### 14. Rhopalosoma guianense Schulz

Figures 13 (head); 28 (venation); and 41 (♂ genitalia)

\*Rhopalosoma guianense Schulz, 1906. Spolia hymenopterologica, p. 221, 226.

♀. key, des. Type: ♀, British Guiana: Oyapok [ in Pará ] (Strasbourg). Type studied in 1974.

\*Rhopalosoma martinezi Ogloblin, 1951. Rev. Soc. Ent. Argentina 15: 14. ♀. des., fig. Type: ♀, Bolivia: Santa Cruz (La Plata). Type studied in 1976. New synonym.

Front wing 9.8 to 16.0 mm. long. Eye notch small and shallow, about 0.50 as deep as width of median ocellus. Lateral ocellus separated from eye by about 0.90 its long diameter. Female tarsal claws long, with a postmedian tooth and a low rounded tooth near base, the apical point moderately stout and curved. First intercubitus about 0.80 as long as second section of cubitus. Nervulus strongly curved, reclivous, distad of basal vein by about 2.6 its length. Basal section of radiella weakly inclivous, weakly curved, its two ends divergent by about  $60^{\circ}$ , radiella meeting cubitella at about  $70^{\circ}$ . Note: The radiella figured is less curved than normal, and less inclivous than normal. Male genitalia as in figure 41.

Fulvoferruginous. Head black between ocelli and the black area extending



ventrolaterally to reach or almost reach the eye margins. Flagellum blackish. Scape and pedicel infuscate above. Wings tinged with brown, the veins brown. Abdomen sometimes infuscate beyond segment 2 or beyond segment 3.

Specimens: 12♂, 37♀ from Costa Rica (Sixola River); Panama (Almirante, Barro Colorado Island, Darien, Margarita, Pipeline Road near Gamboa, San José in the Pearl Islands, and Trinidad River); Colombia (Coqueto on the Rio Ortegua near Rio Peneya); Ecuador (Coca); Peru (Avispas at 400 m. and Chanchamayo at 1,300 m.); Bolivia (Alto Palmar at 1,100 m. in Cochabamba); Trinidad (Morne Bleu at 2,700 ft.); British Guiana (Blairmont, Demarara in Georgetown, King Frederick William IV Falls on the upper Courantyne River, and Moraballi Creek of the Essequibo River); and Surinam (45 kilometers south of Paramaribo). One of the specimens is labeled as collected at light. The specimens from Trinidad River, Panama and from Sixola River, Costa Rica are paratypes of *R. simile* Brues (misdetermined). Specimens are in the collections of Cambridge, London, Ottawa, Townes, and Washington.

This species ranges from Central America to Bolivia and Surinam.

#### 15. *Rhopalosoma breelandi*, new species

Figures 14 (head); 29 (venation); and 42 (♂ genitalia)

Male: Front wing 9.3 to 10.3 mm. long. Eye notch about 0.93 as deep as width of median ocellus. Lateral ocellus separated from eye by about 0.60 its long diameter. First intercubitus about 0.82 as long as second section of cubitus. Nervulus sinuate, reclivous, distad of basal vein by about 1.55 its length. Basal section of radiella subvertical, bowed at center, its two ends divergent at about 70°, radiella joining cubitella at about 60°. Genitalia as in figure 42.

Ochraceous. Pedicel brown. Flagellum dark brown. Interocellar area fuscous and the fuscous area extending laterally to reach the eye margin. Wings with an ochraceous tinge, the veins light brown.

Female: Unknown.

Type: ♂, Margarita, Canal Zone, Panama, Jan. 1960, Sam Breeland (Townes).

Paratype: ♂, same locality and collector as type, dated June, 1960 (Townes).

#### 16. *Rhopalosoma alvarengai*, new species

Figures 15 (head); 30 (venation); and 43 (♂ genitalia)

Front wing 7.7 to 14 mm. long. Eye notch about 0.70 as deep as width of median ocellus. Lateral ocellus separated from eye by about 0.43 its long diameter. Female tarsal claws long, with a postmedian tooth and subbasally with a low rounded prominence, the apical point stout and moderately curved. First intercubitus about 0.74 as long as second section of cubitus. Nervulus reclivous, strongly curved, distad of basal vein by about 2.1 its length. Basal section of radiella weakly inclivous, strongly curved, its two ends divergent at about 60°, radiella meeting cubitella at about 60°. Male genitalia as in figure 43.

Ferruginous. Ocellar area dark brown, the brown mark extending laterally to eye margin, often this dark area covering also the upper part of frons. Pedicel and flagellum blackish. Scape infuscate apically. Wings tinged with brown,



the veins brown. Abdomen of male often infusate beyond second segment.

Type: ♀, Represa Rio Grande, Guanabara, Brazil, Jan. 1968, M. Alvarenga (Townes).

Paratypes: 33♀, same locality and collector as type, dated Jan., Feb., Mar., Sept., Oct., Nov., and Dec., 1967, 1968, 1969, 1970, and 1972 (Townes). 2♀, Alto da Serra, Moretes, Brazil, Feb. 12 and 18, 1966, H. and M. Townes (Townes). ♀, Campina Grande (near Curitiba), Brazil, Feb. 16, 1966, H. and M. Townes (Townes). 3♀, Caruaru, Brazil, Apr. 1972, M. Alvarenga (Townes). 4♂, 13♀, Encruzilhada, 960 m., Bahia, Brazil, Nov. 1972, M. Alvarenga (Townes). 2♂, 6♀, Encruzilhada, 980 m., Bahia, Brazil, Nov. 1974, M. Alvarenga (Townes). 6♂, 11♀, Linhares, Espirito Santo, Brazil, Sept. 1972, M. Alvarenga (Townes). 2♀, Margaritiba, Muriqui, Rio de Janeiro, Brazil, July 1969, M. Alvarenga (Townes). 3♂, Rio de Janeiro, Brazil, Jan. 1939, R. C. Shannon (Washington). ♂ (paratype of R. simile Brues, misdetermined), Tuis, 2,400 ft., Costa Rica, C. H. Lankester (Washington).

This species is known from eastern and southeastern Brazil and from Costa Rica.

#### Lanceolatum Group

Front spur of middle and hind tibiae with a narrow basal neck that is about as long as diameter of their basitarsi, distad of the neck swollen and continued in a narrowly lanceolate shape, bent about  $15^{\circ}$  at the distal end of the neck. Nervulus straight, vertical.

One species is known, and this only in the male sex.

#### 17. Rhopalosoma lanceolatum, new species

Figures 16 (head); 31 (venation); and 44 (♂ genitalia)

Male type: Front wing 10.9 mm. long. Eye notch 0.65 as deep as width of median ocellus. Lateral ocellus separated from eye by 0.5 its long diameter. First intercubitus 1.2 as long as second section of cubitus. Nervulus weakly inclivous, almost straight, distad of basal vein by 1.55 its length. Basal section of radiella vertical, weakly curved. Genitalia as in figure 44.

Fulvous. Antenna entirely black. Head black, the cheek, clypeus, and occiput fulvous. Maxillary palpus weakly infusate except basally. Wings with a fulvous tinge. Abdomen blackish beyond the first segment except that segment 2 is stained with fulvous, more strongly fulvous toward base.

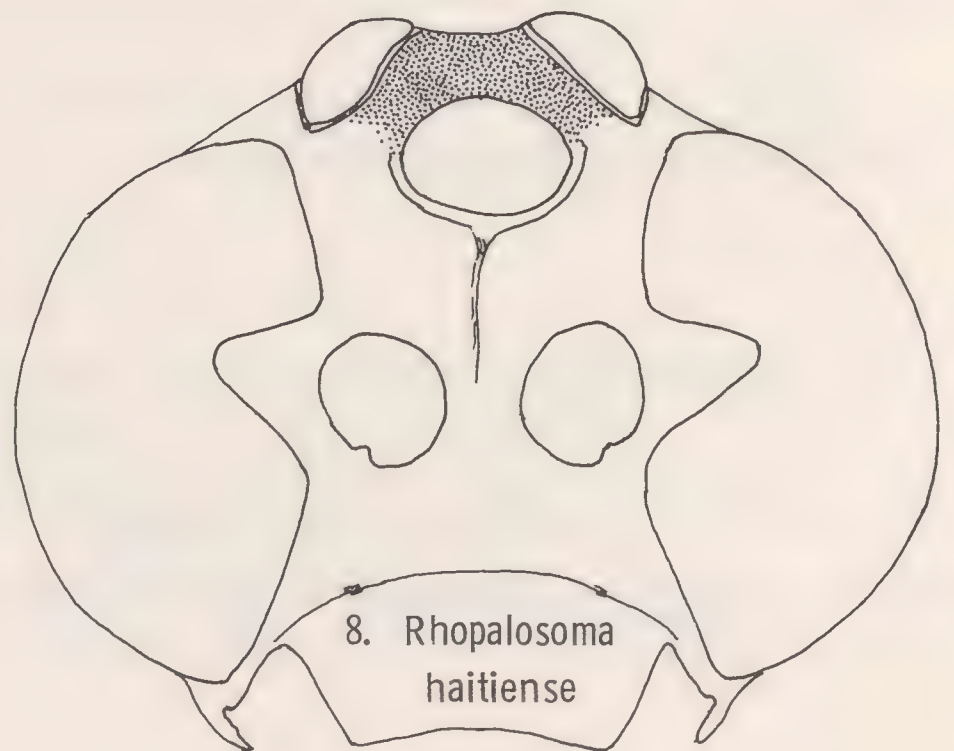
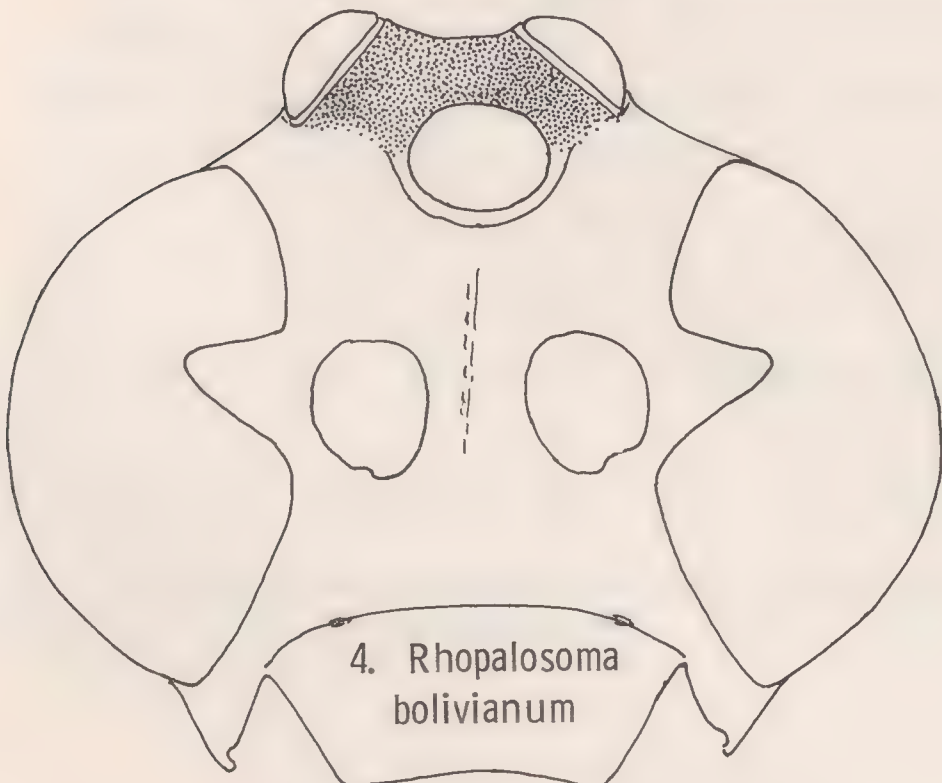
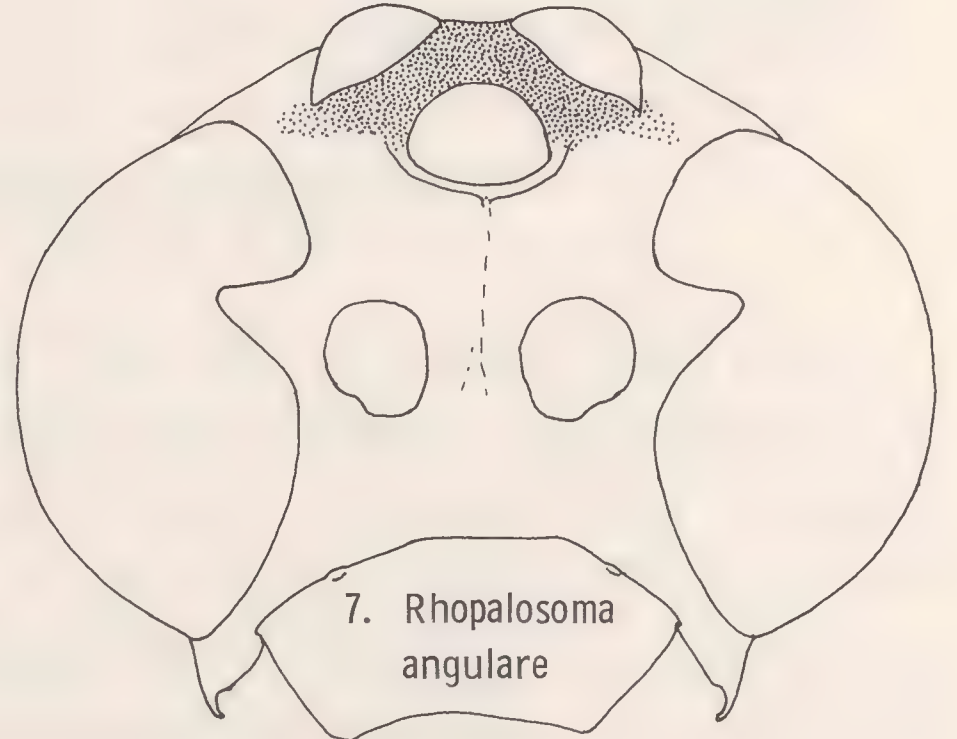
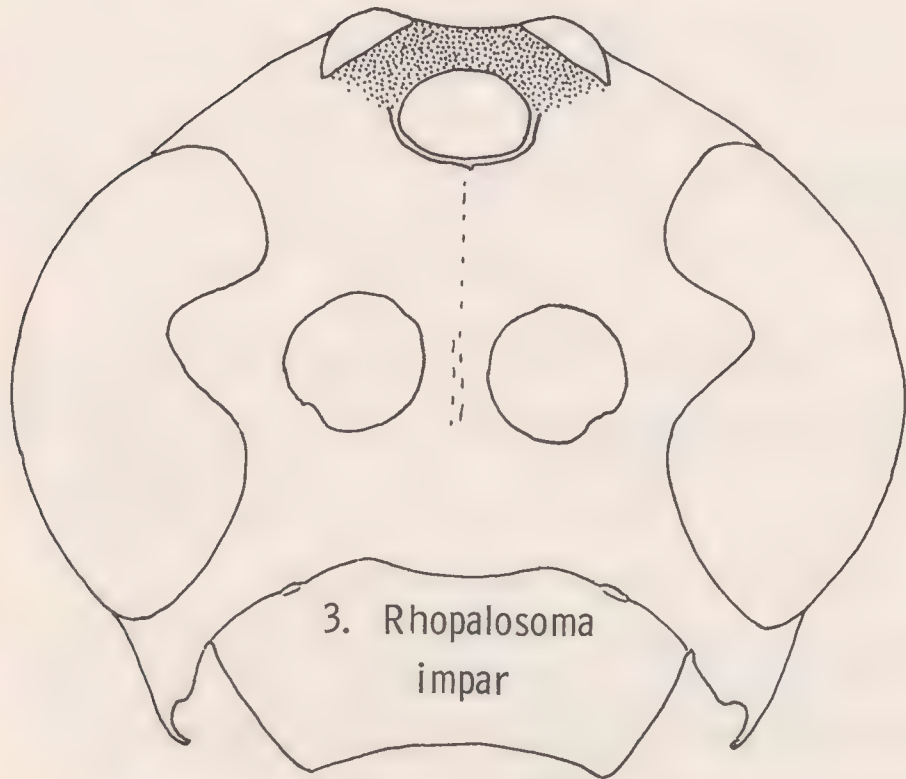
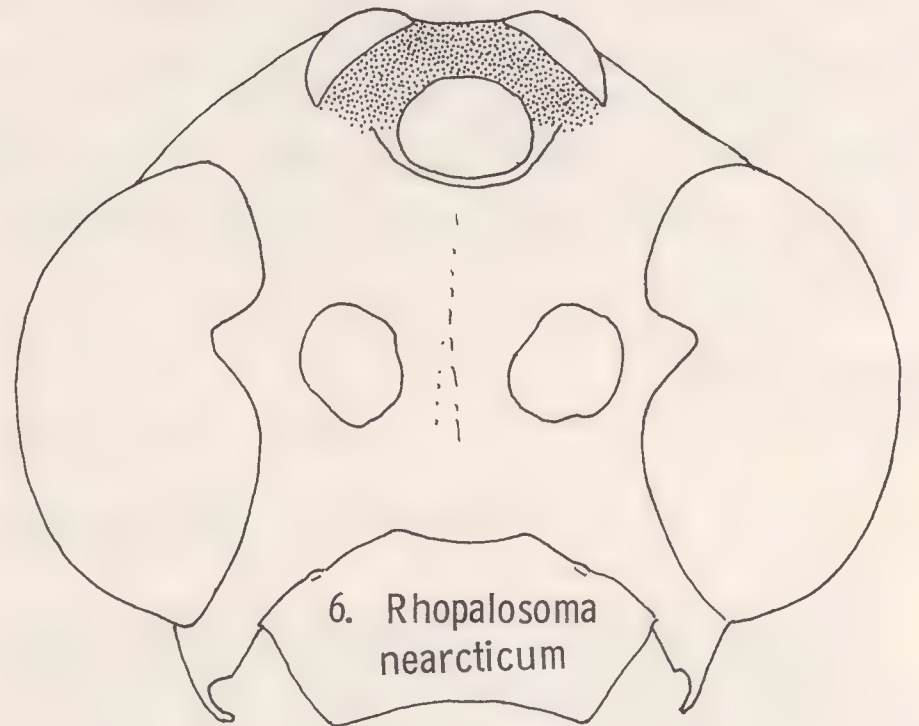
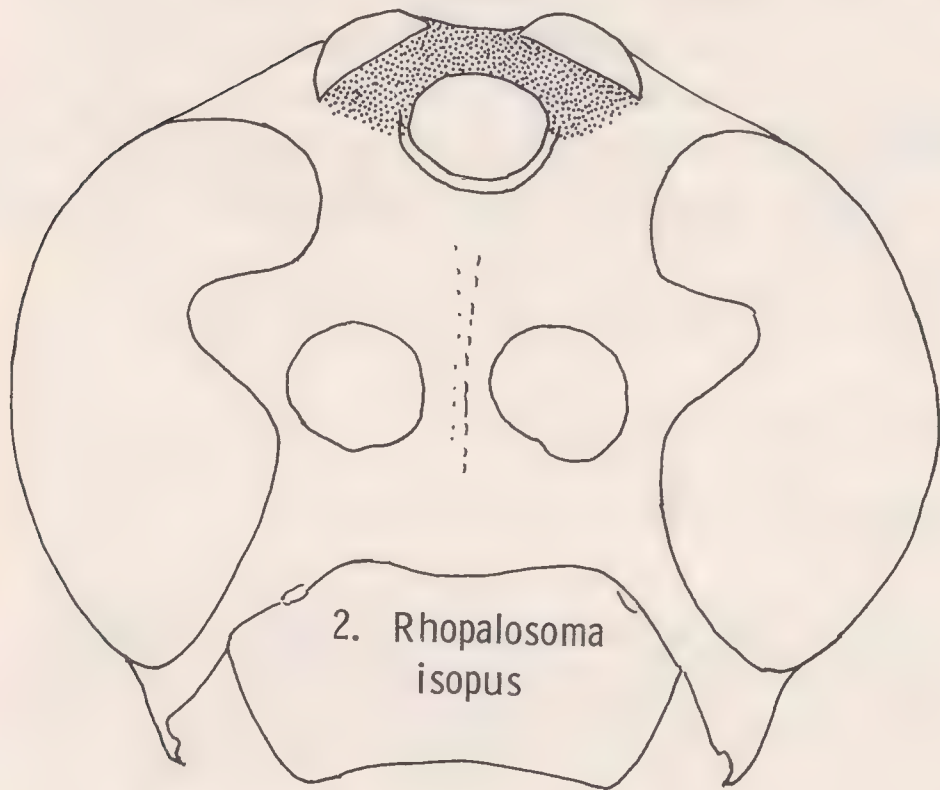
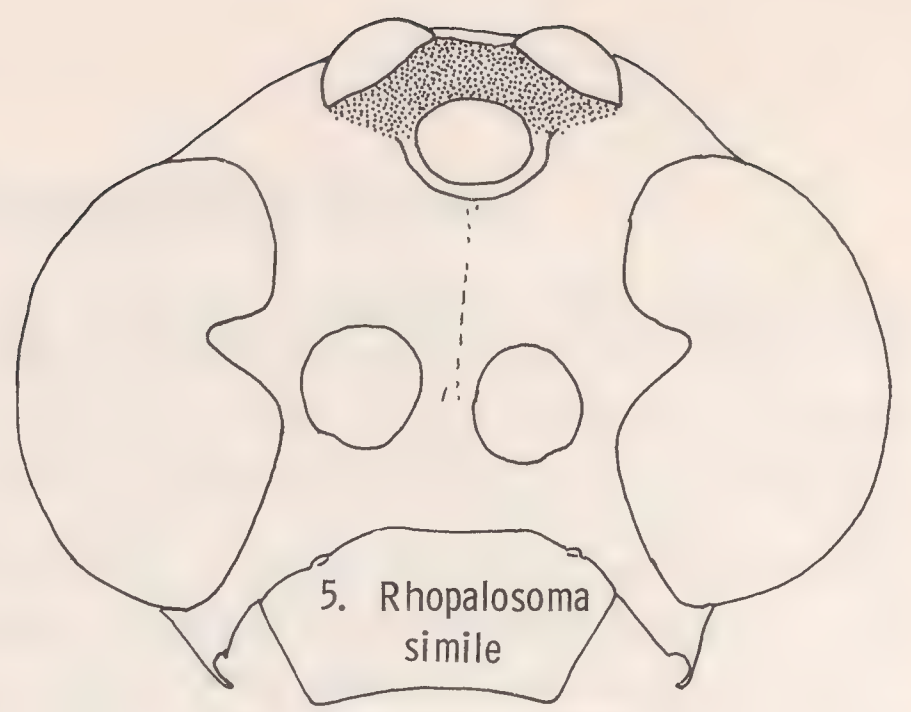
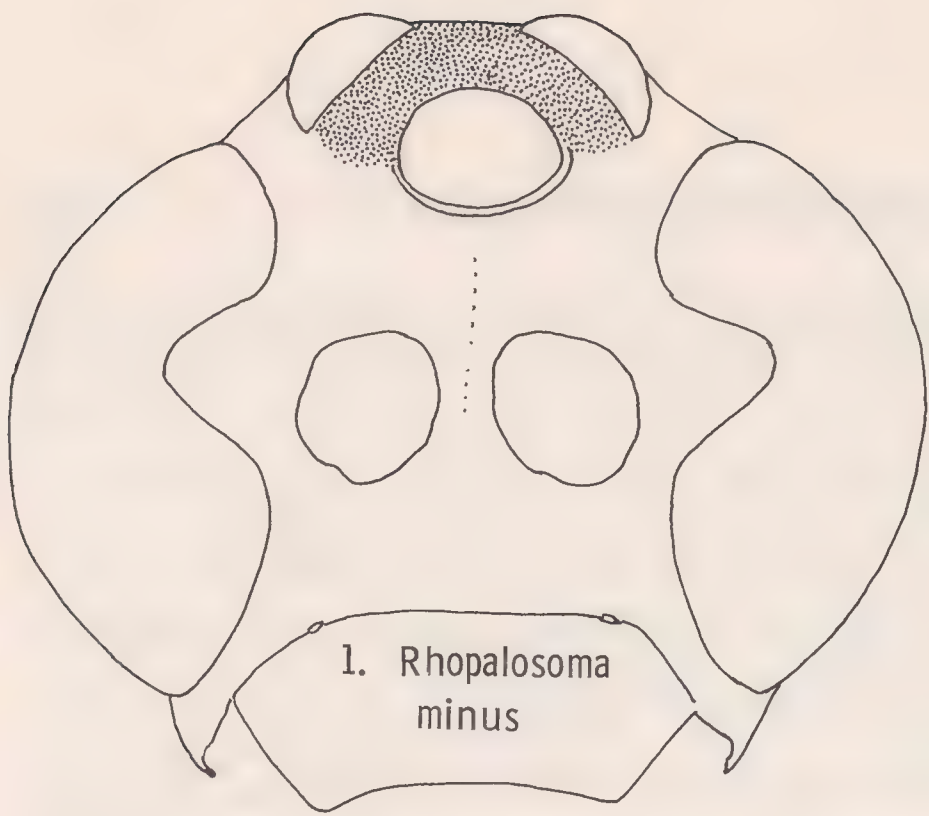
Female: Unknown.

Type: ♂, Nova Teutonia,  $27^{\circ} 11' S$ ,  $52^{\circ} 23' W$ , 300-500 m., Brazil, Nov. 1968, Fritz Plaumann (Ottawa).

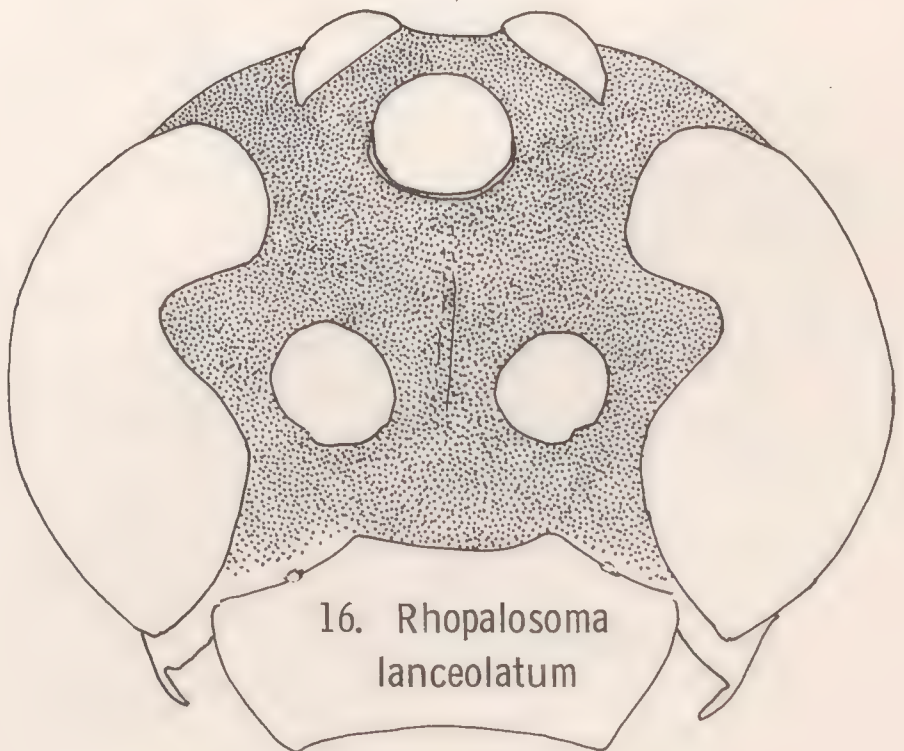
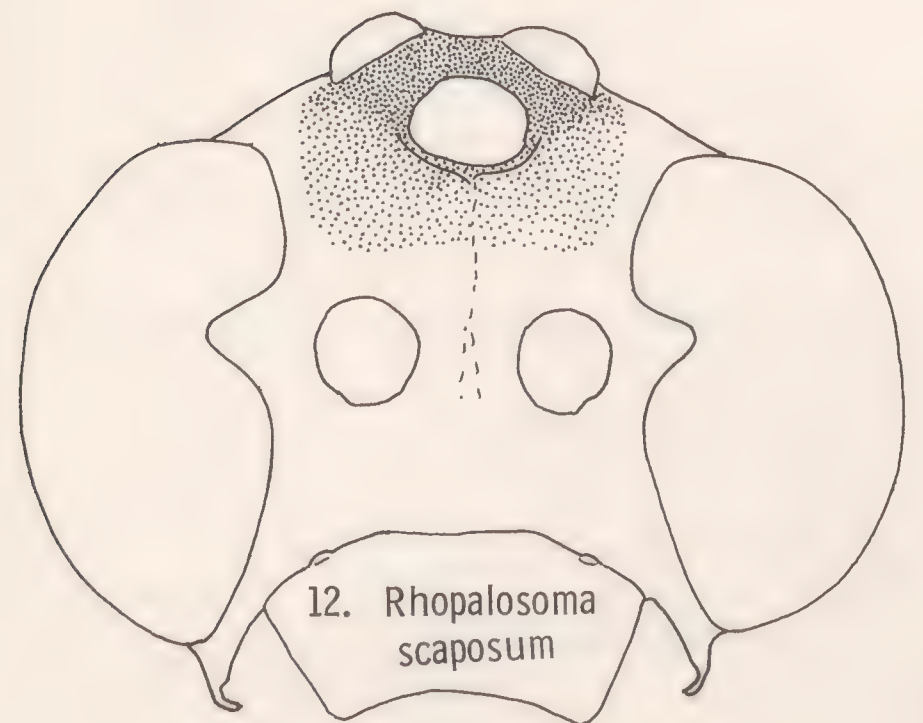
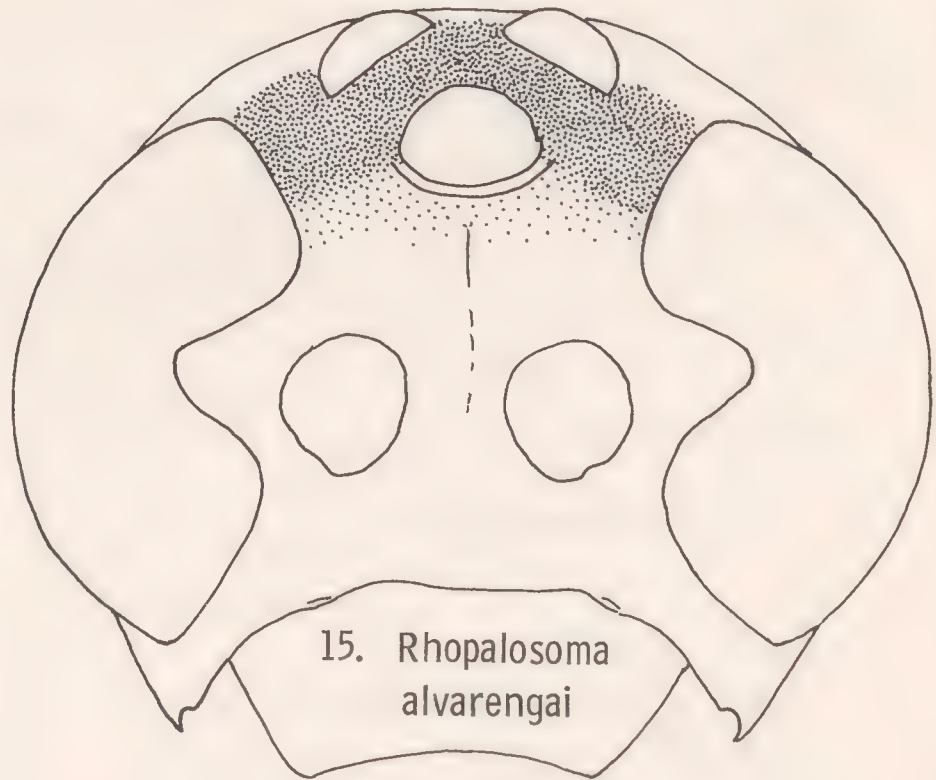
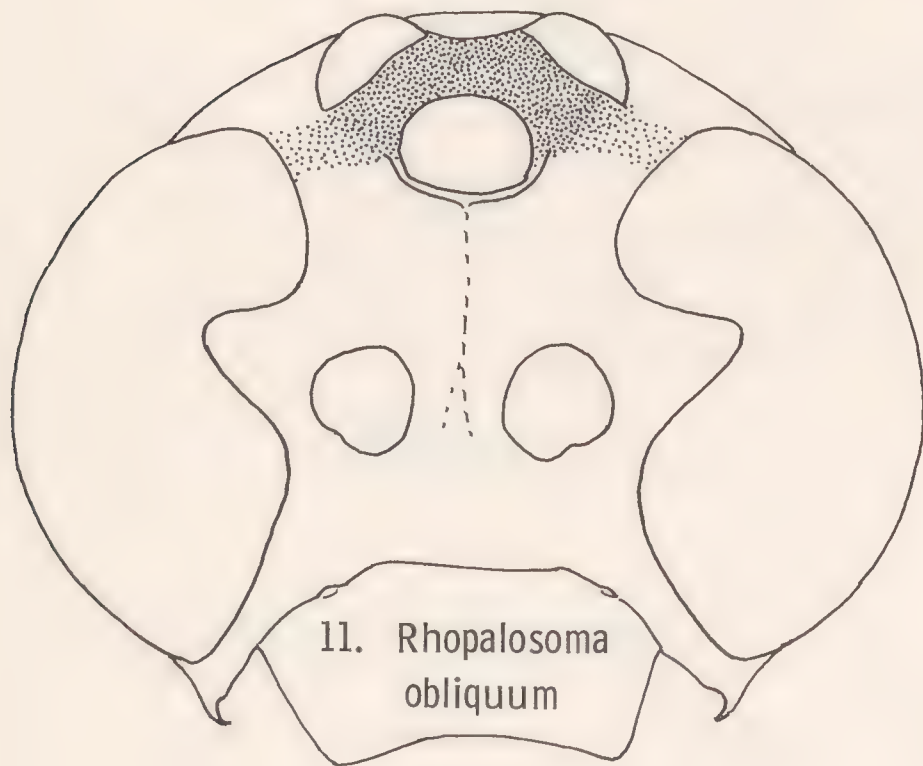
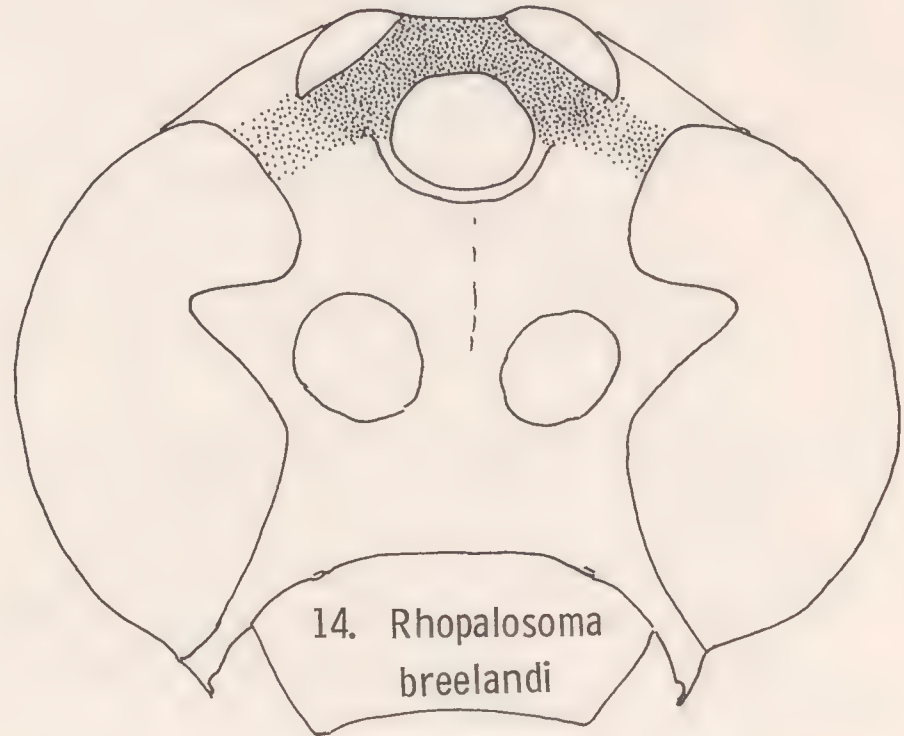
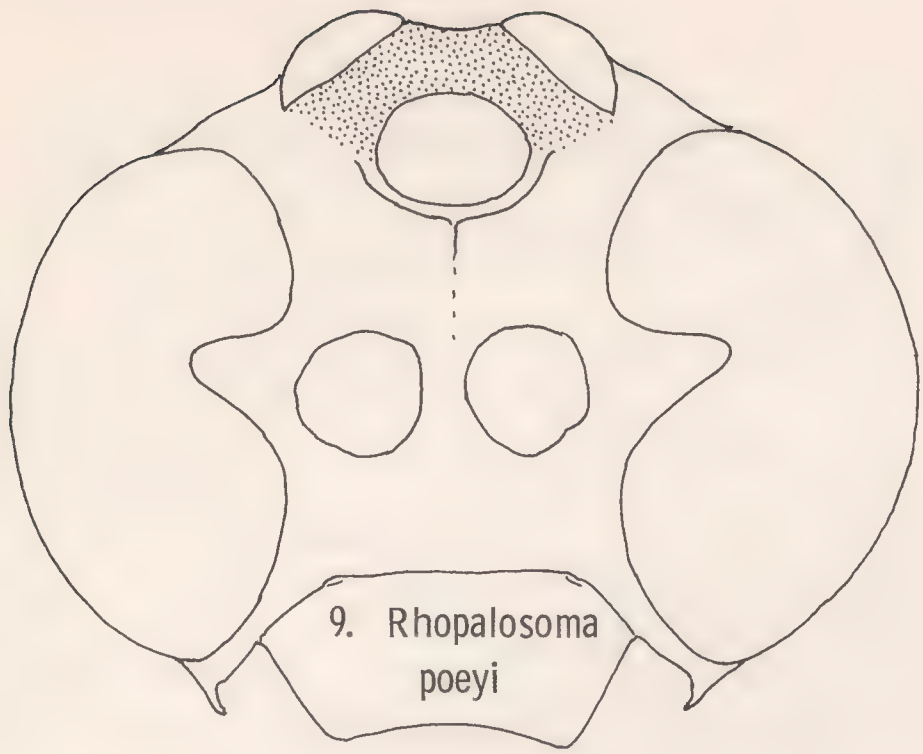
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 32-44. Rhopalosoma, male genitalia (penis valve, and volsella and digitus).

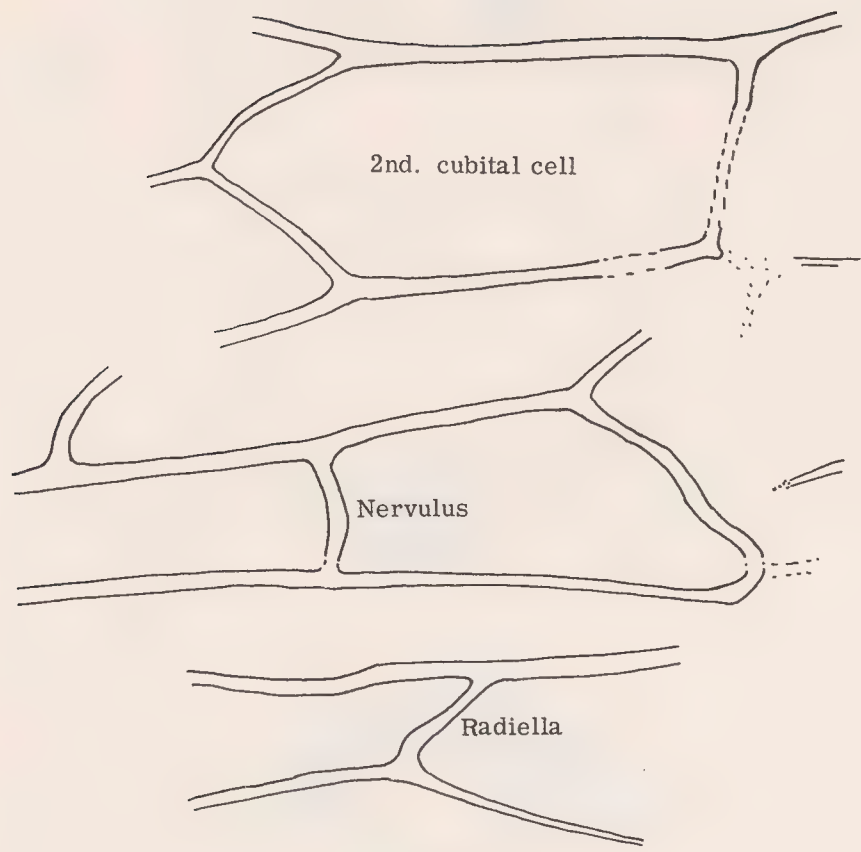




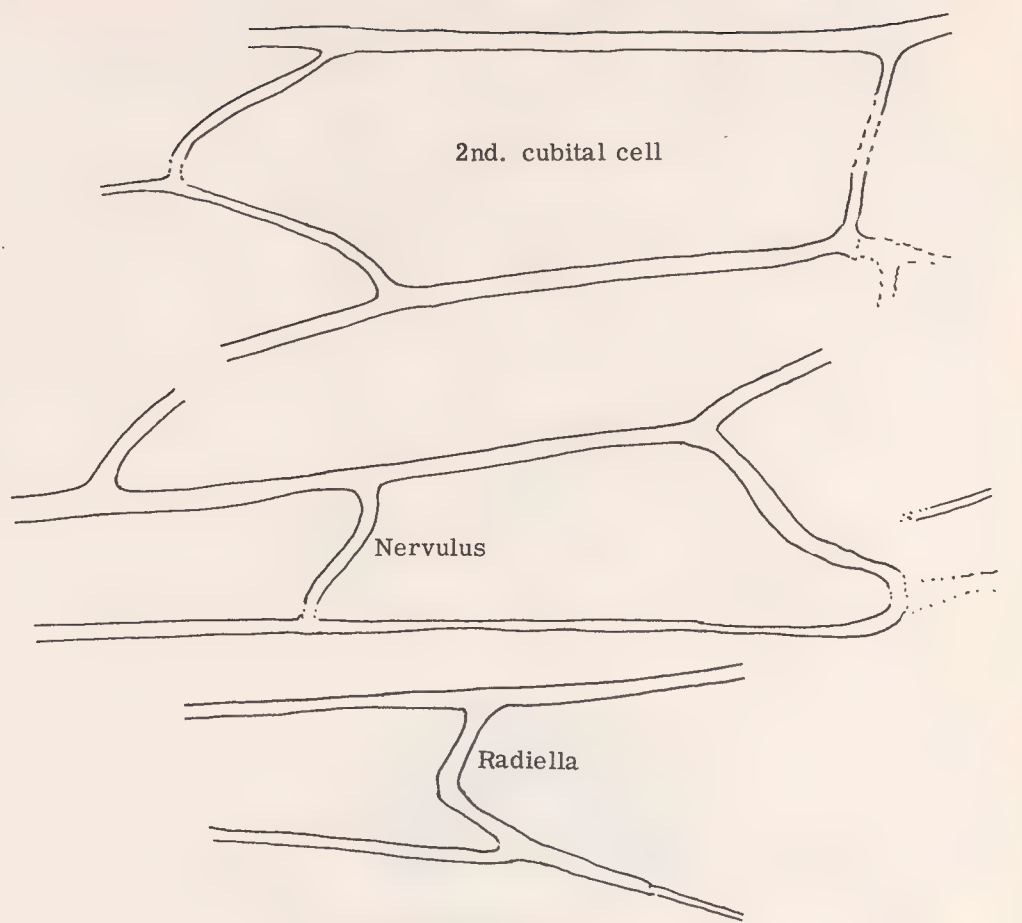




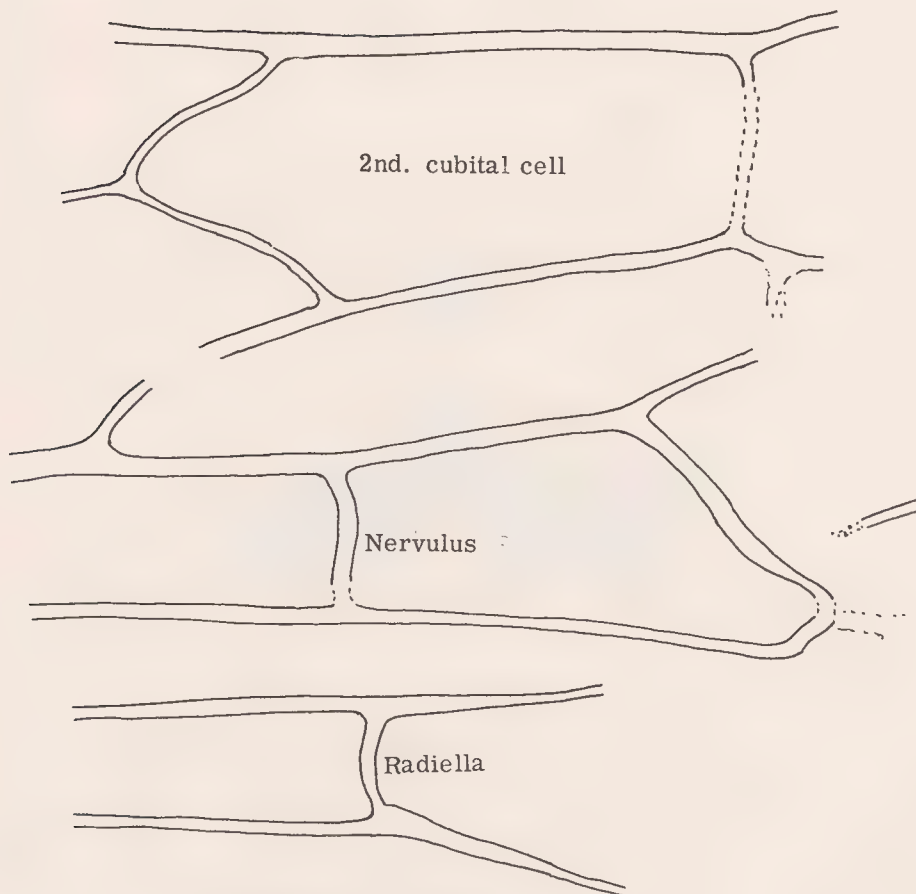




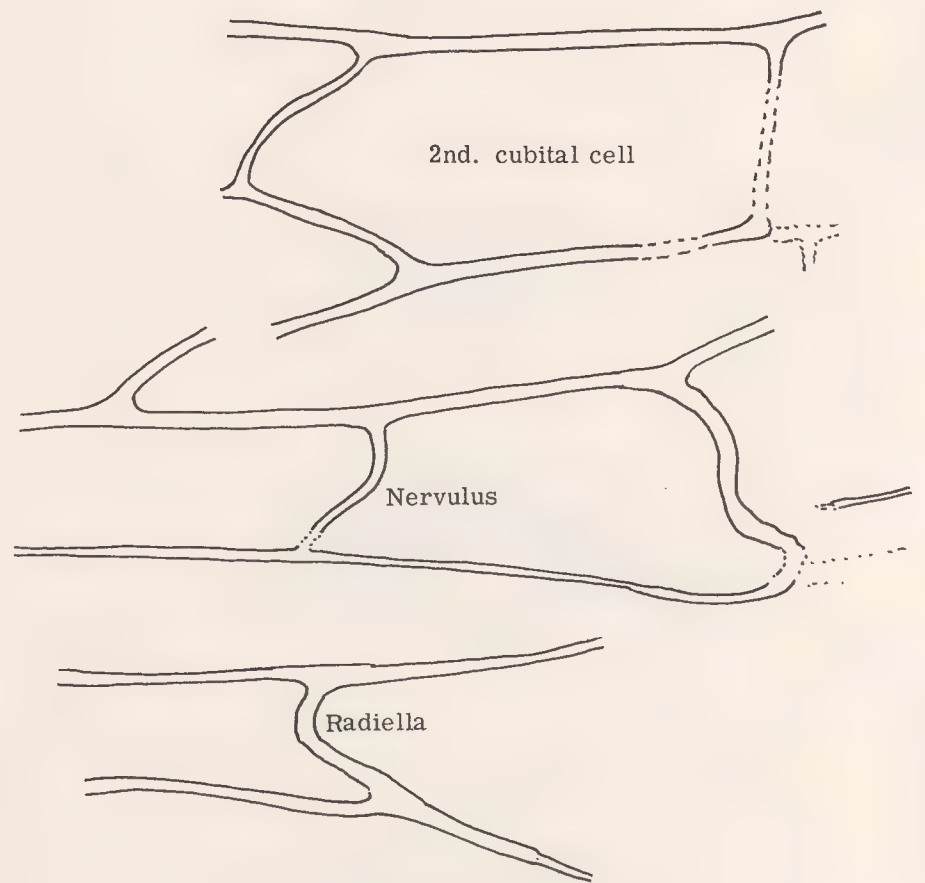
17. *Rhopalosoma minus*



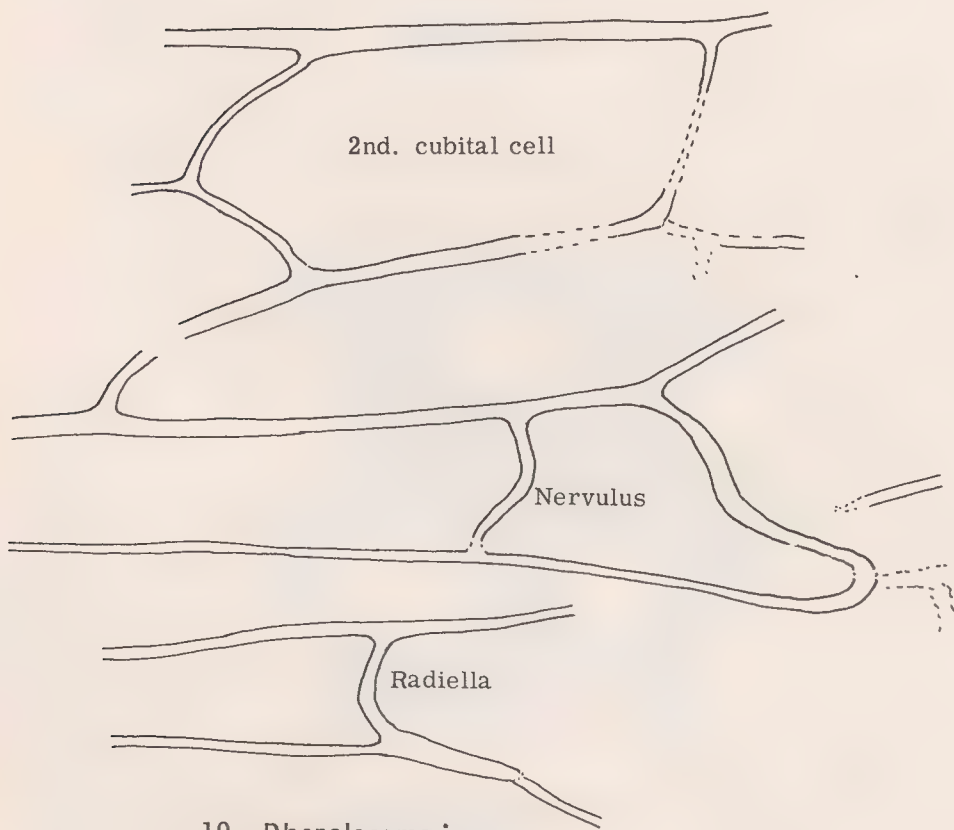
20. *Rhopalosoma bolivianum*



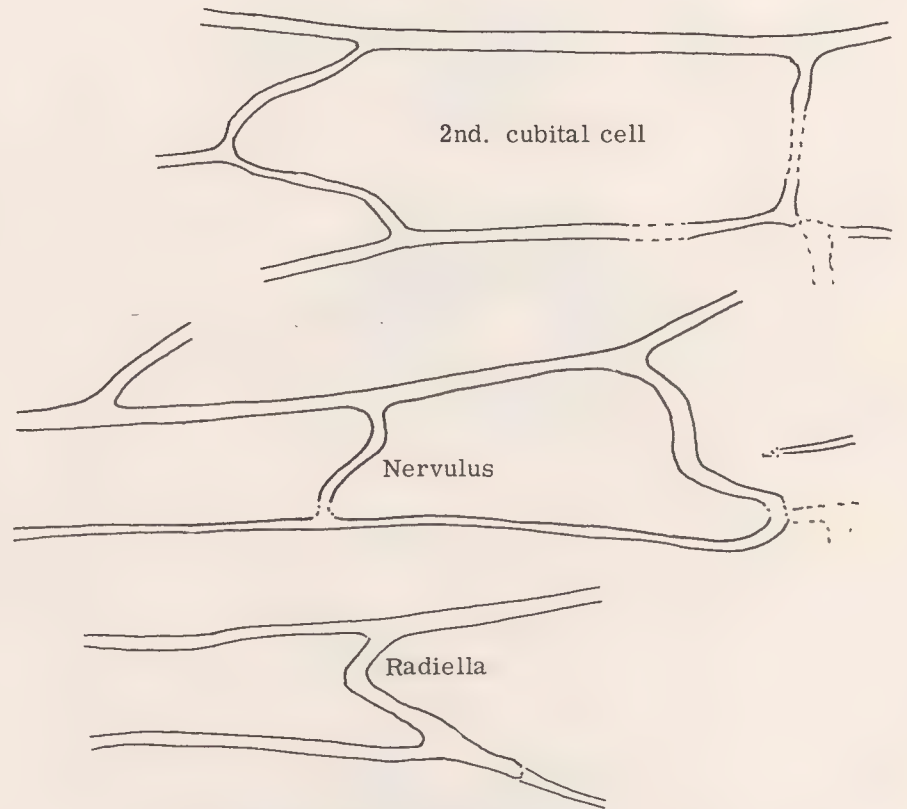
18. *Rhopalosoma isopus*



21. *Rhopalosoma nearcticum*

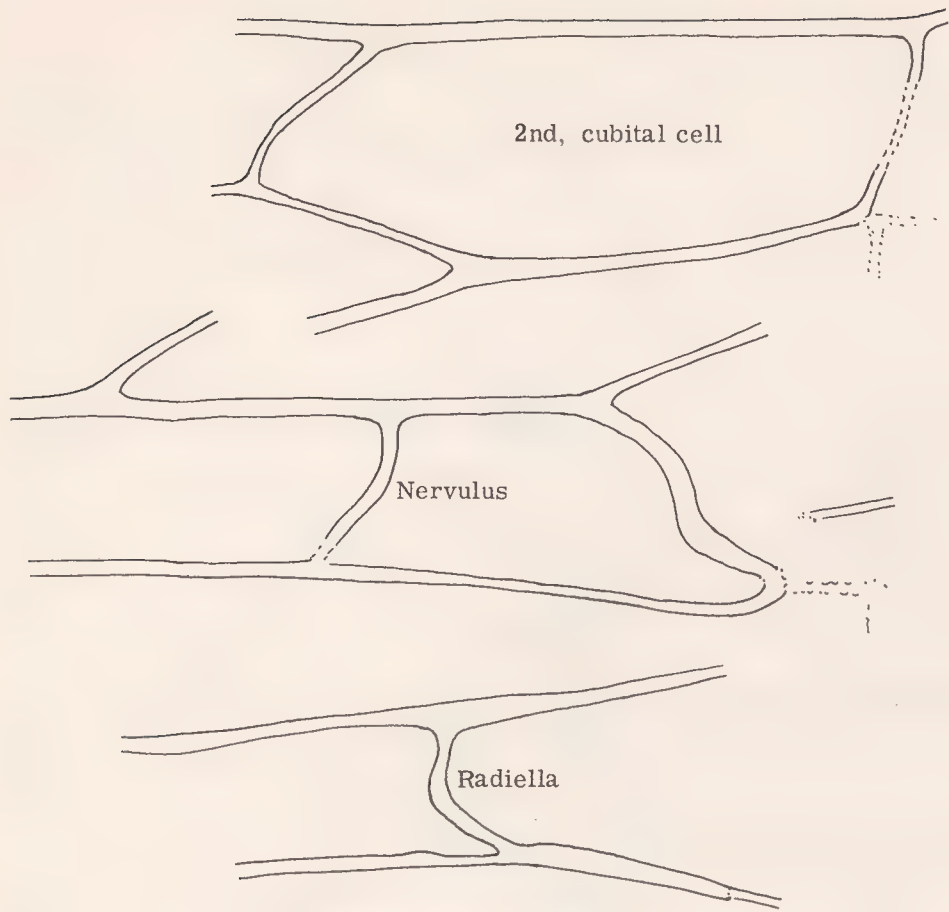


19. *Rhopalosoma impar*

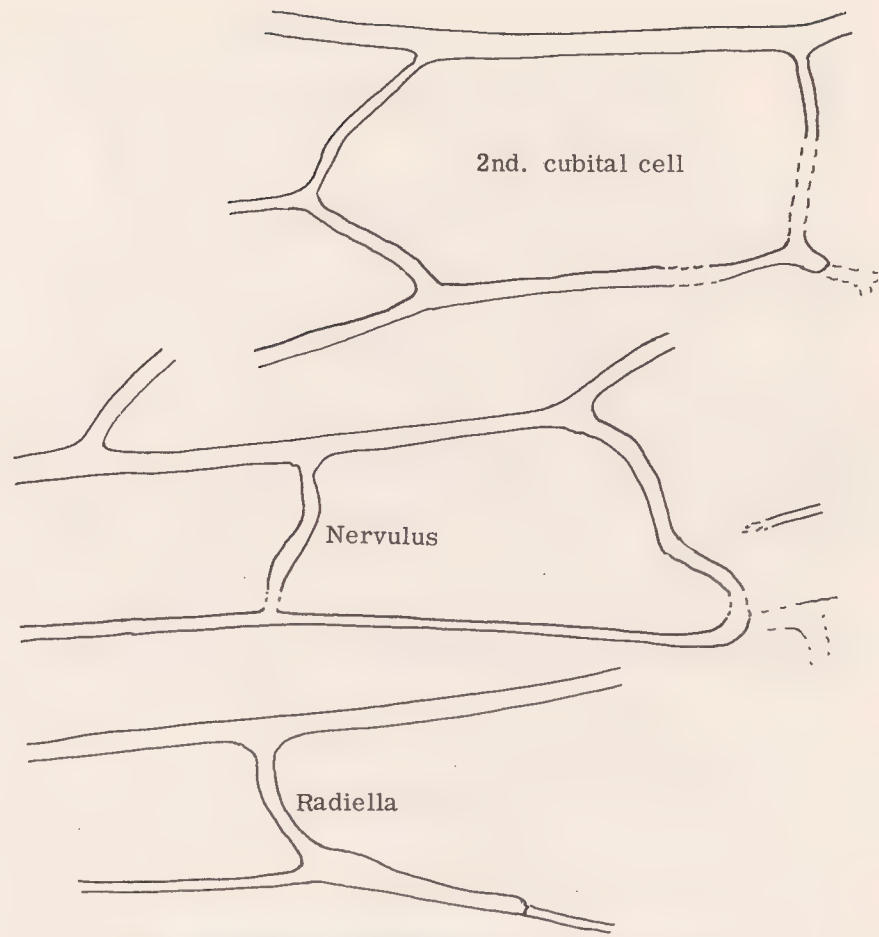


22. *Rhopalosoma angulare*

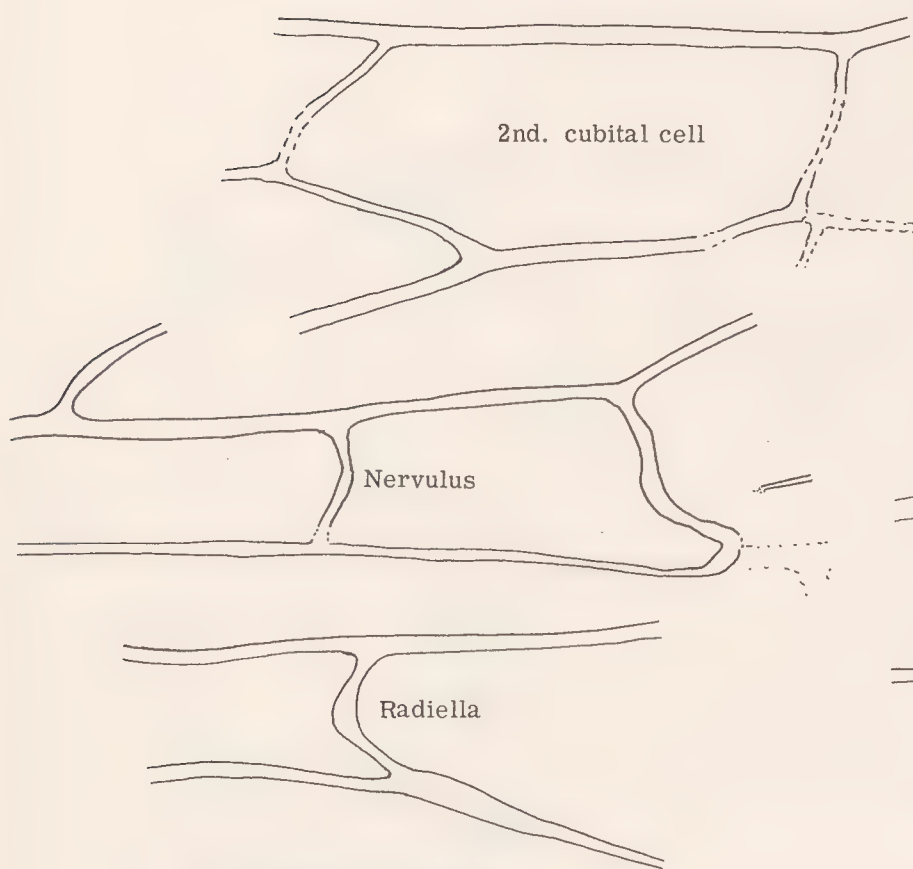




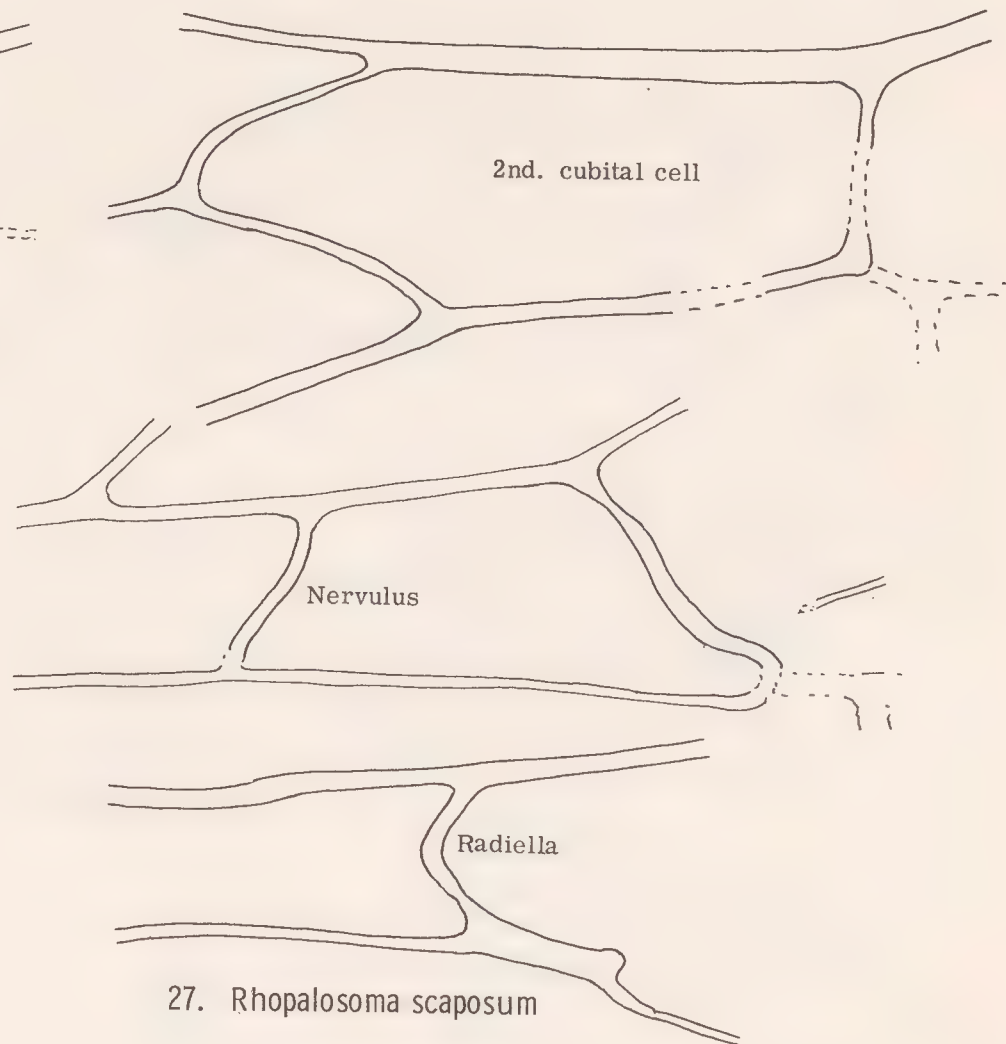
23. *Rhopalosoma haitiense*



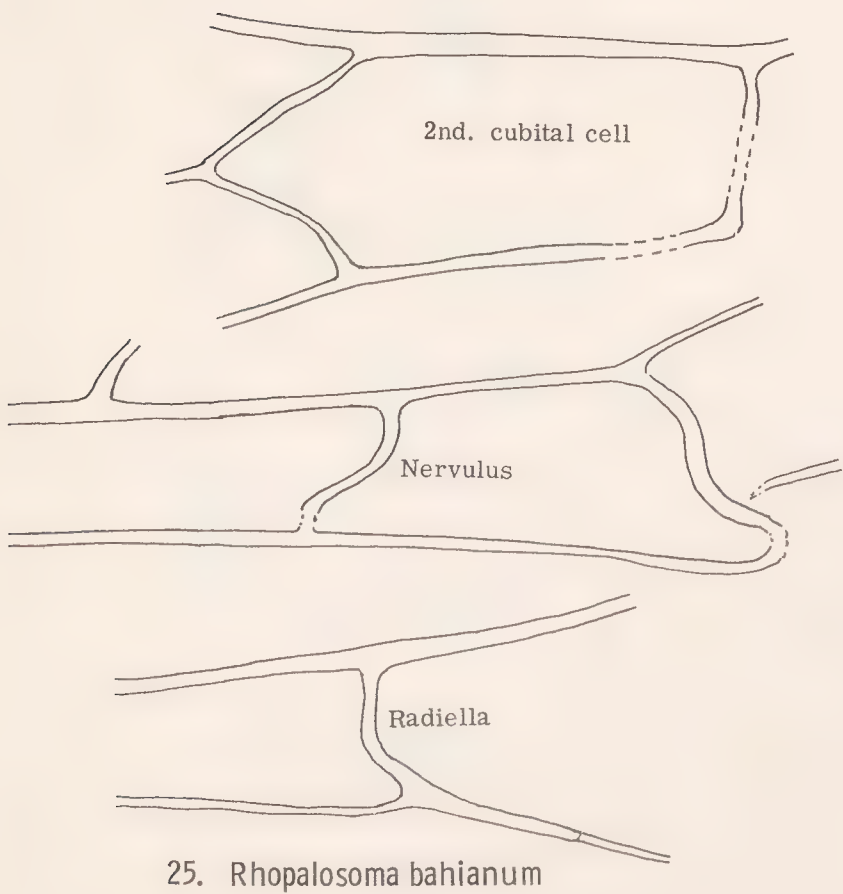
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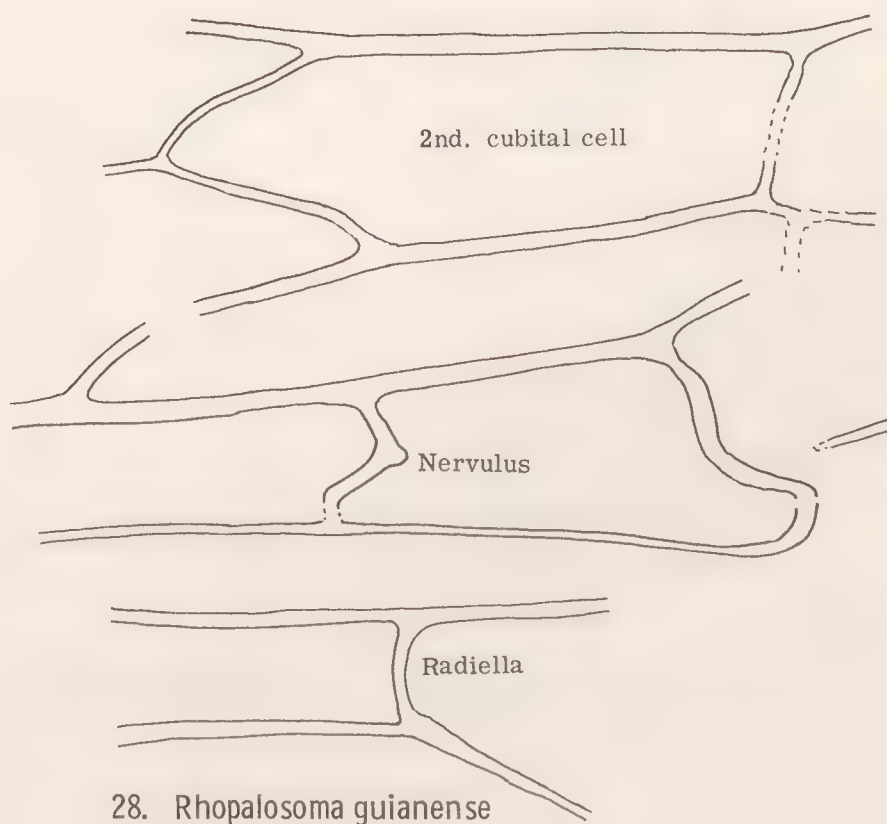
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27. *Rhopalosoma scaposum*

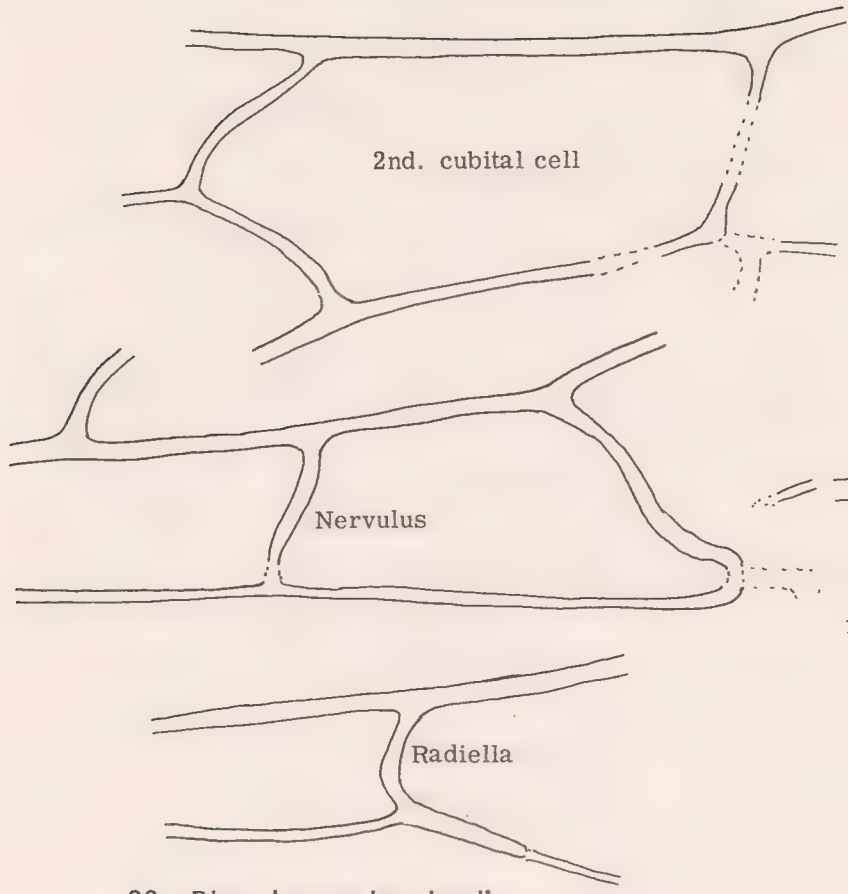


25. *Rhopalosoma bahianum*

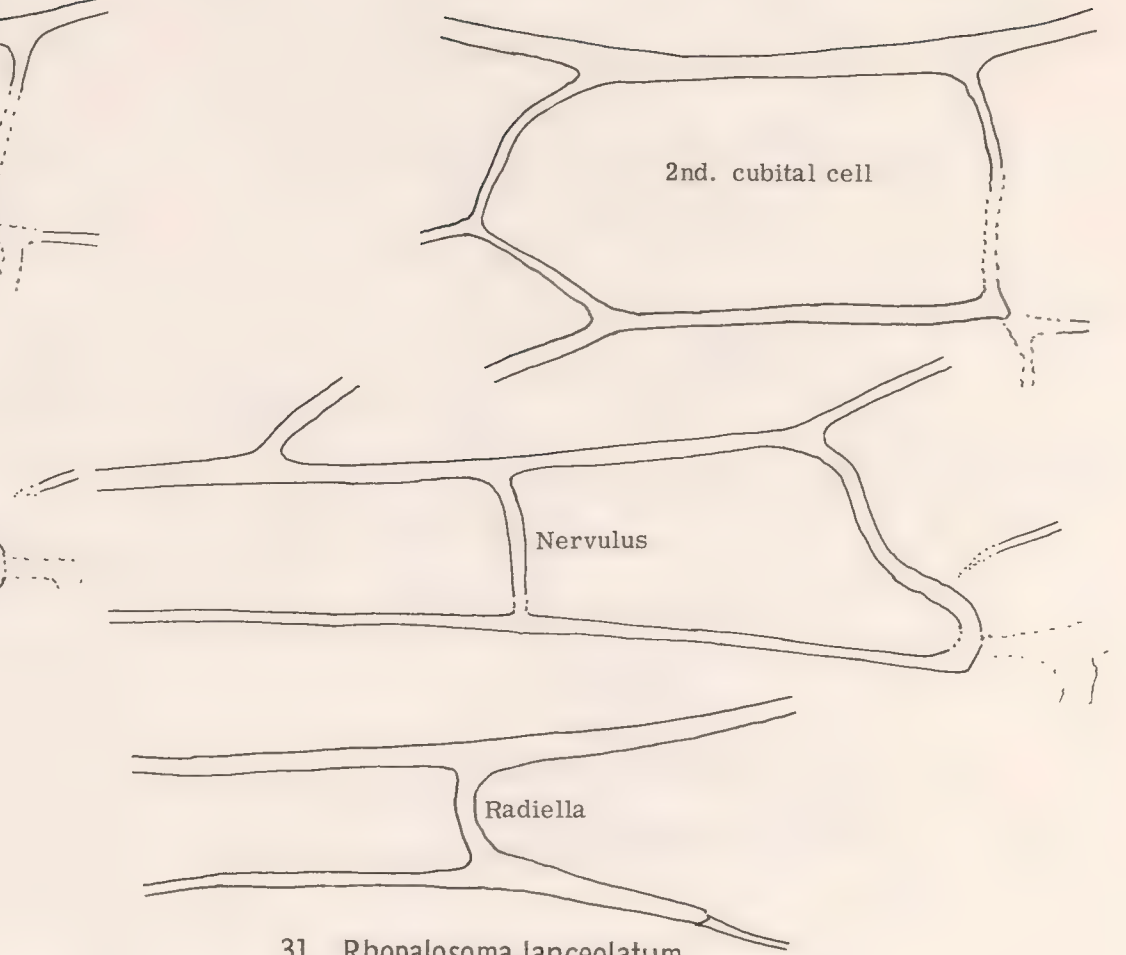


28. *Rhopalosoma guianense*

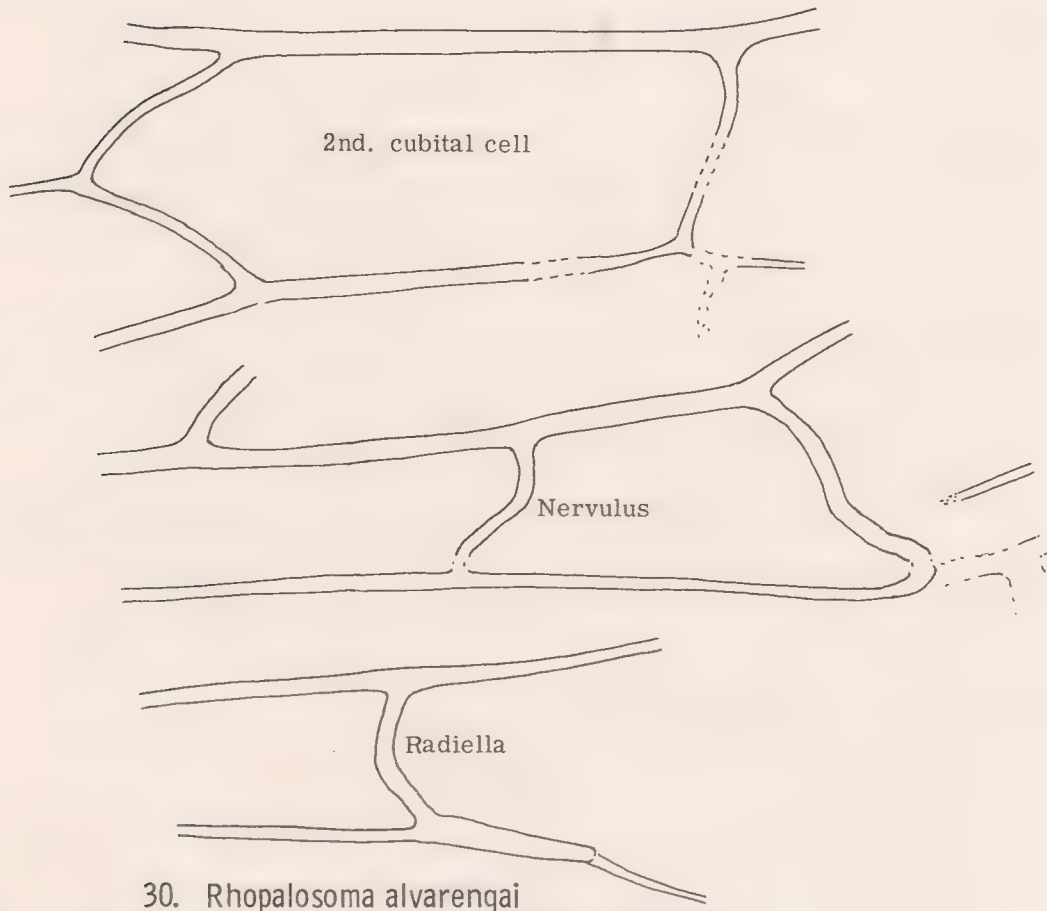




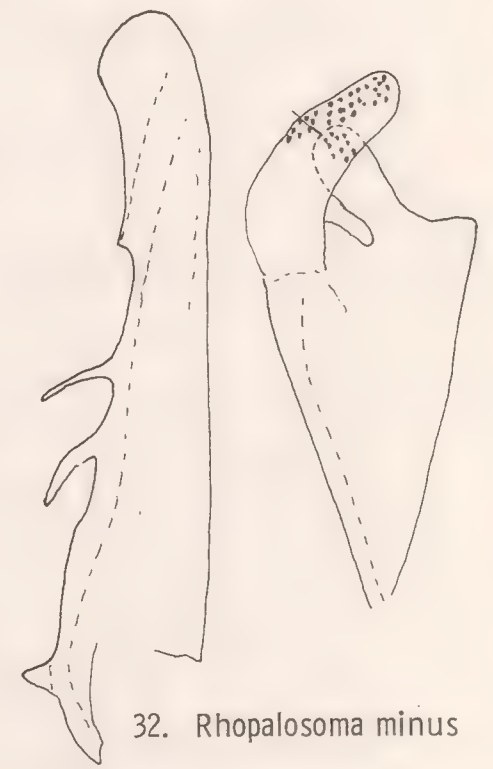
29. *Rhopalosoma breelandi*



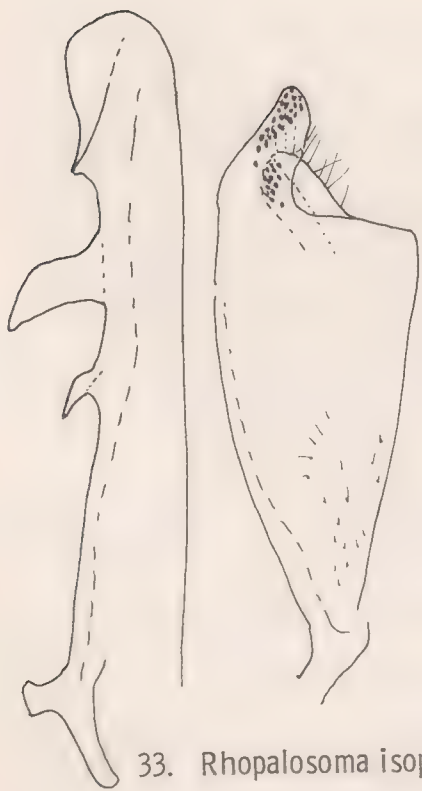
31. *Rhopalosoma lanceolatum*



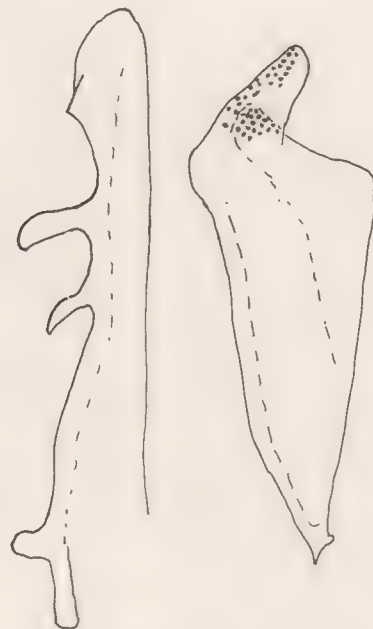
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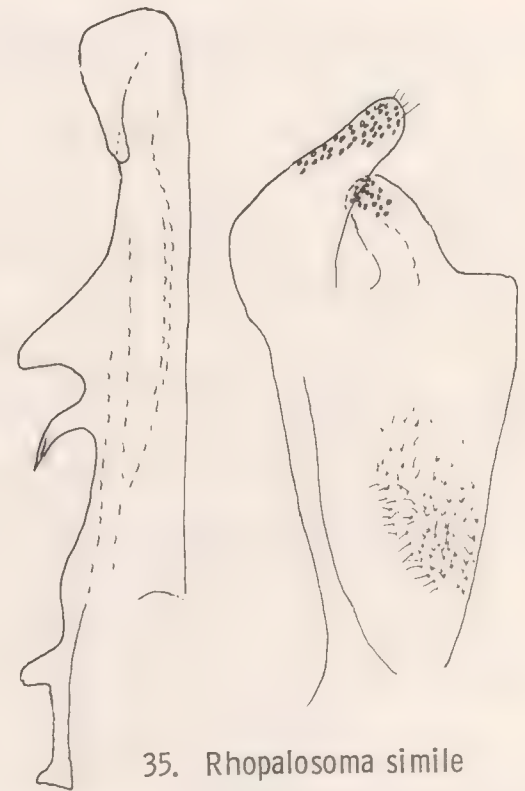
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33. *Rhopalosoma isopus*

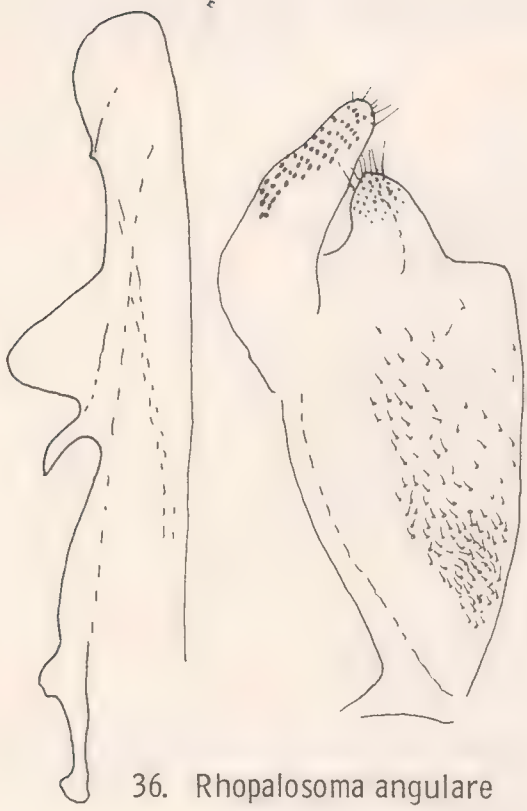


34. *Rhopalosoma impar*

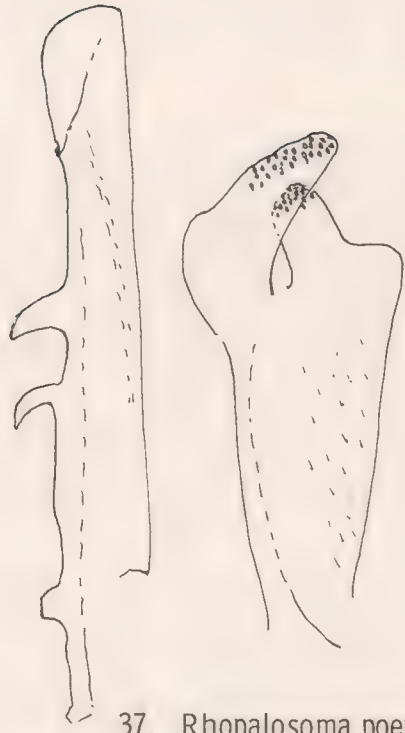


35. *Rhopalosoma simile*





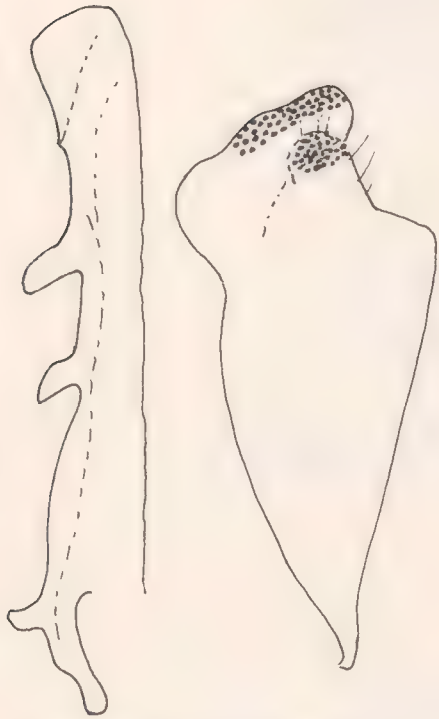
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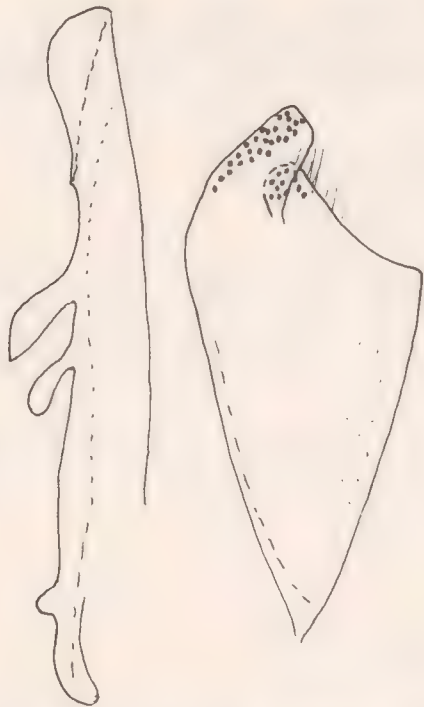
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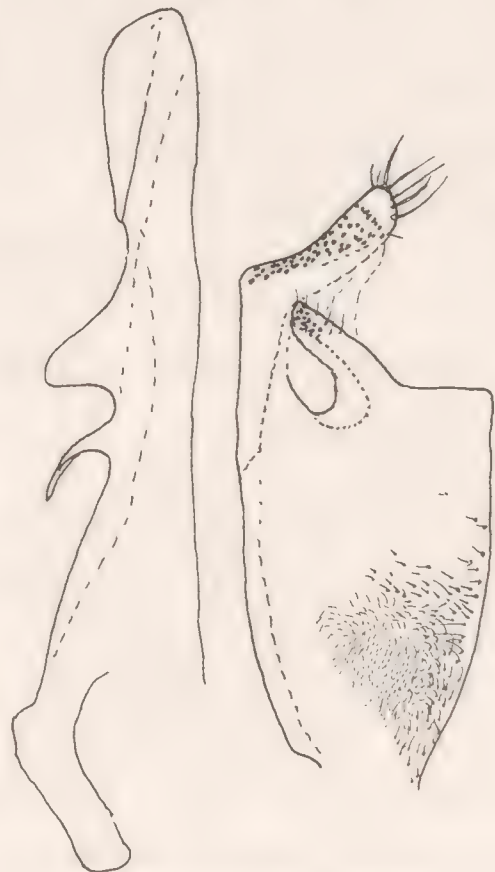
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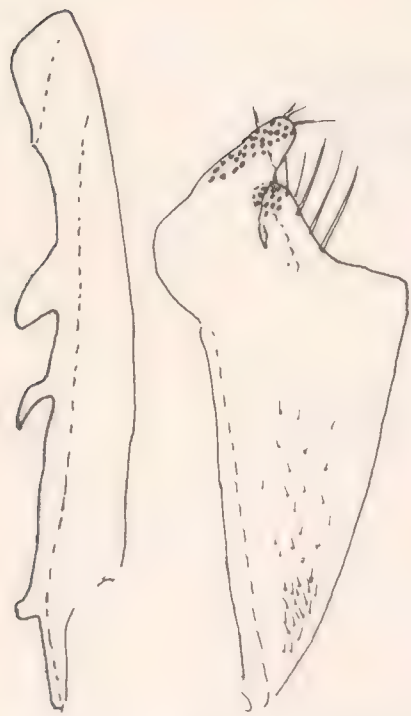
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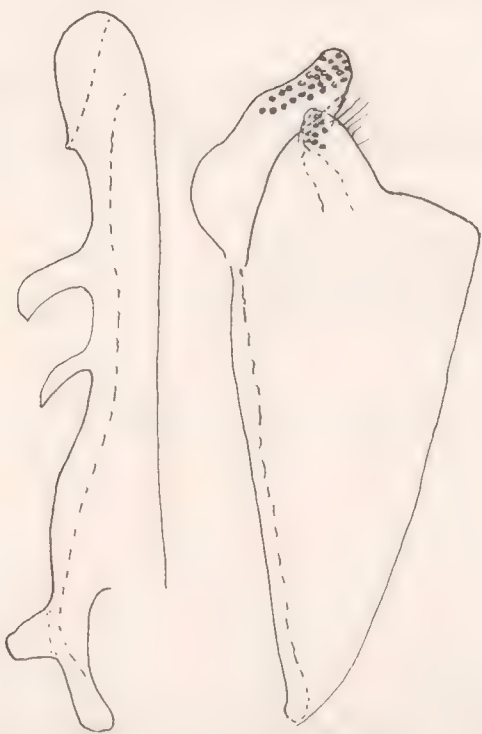
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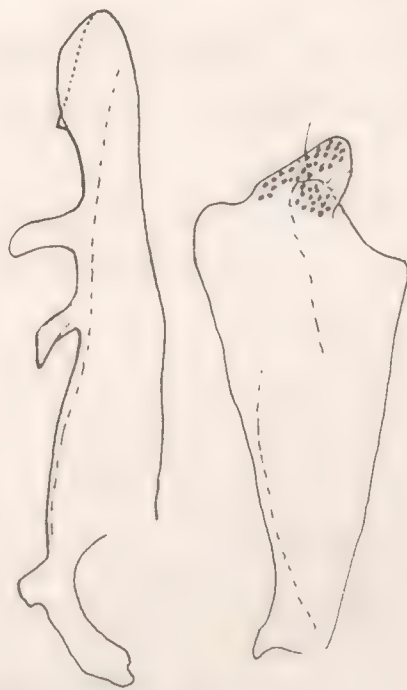
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44. *Rhopalosoma lanceolatum*



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